DOCUMENT RESUME

ED 199 032 SE 033 604

AUTHOR Hodes, Lance: And Others

TITLE A Comprehensive Assessment of Science Education in

che Two-Year College, Volume II: Appendices.

INSTITUTION Westat Research, Inc., Rockville, Md.

SPONS AGENCY National Science Foundation, Washington, D.C.

PUE PATE Jun 80

CONTRACT NSF-SED78-21054

NOTE 191p.: For related document, see SE 033 603.

FDFS PRICE MF01/PC08 Plus Postage.

DESCRIPTORS *Evaluation Methods: *Needs Assessment: Science

Education: *Science Instruction: *Science Programs:

*Surveys: *Two Year Colleges

IDENTIFIERS *Science Education Research

ABSTRACT

Volume II of a national needs assessment of science education in two-year colleges, consists of six appendices which provide supporting material and supplementary tabulations of data related to the study describer in Volume I (SE 033 603). Appendices A, B, and C consist of descriptions of the following in subsequent order: sample design and the sampling methods used to select colleges, faculty and students: sources for selection of the sample of colleges studies: and correction procedures for reclassifying colleges after feedback was obtained from the initial sample. Appendix D contains tabulations of data obtained through the use of questionnaires sent to students, faculty, and institution officials. Appendix E includes institutional faculty, and student questionnaires. Weighting procedures are explained in Appendix F. (Author)

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIGINATING IT POINTS OF VIEW OR OPINIONS.
STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF
EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Patricia Babb of the NSF

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

A COMPREHENSIVE ASSESSMENT OF SCIENCE EDUCATION IN THE TWO-YPAR COLLEGE

Volume II. Appendices

Submitted to:

National Science Foundation 5225 Wisconsin Avenue, N.W. Washington, D.C. 20015

Under:

Contract Number SED-7821054

Submitted by:

WESTAT

An Employee-Owned Research Corporation 11600 Nabel Street • Rockville Maryland 20852 • 301 581:5310

June 1980

This report was prepared under Contract No. SED-7821054 with the National Science Foundation (NSF). Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment. This report, therefore, does not necessarily represent positions or policies of the NSF, and no official endorsement should be inferred.



TABLE OF CONTENTS

Appendix		Page
A	SAMPLE DESIGN FOR STUDY OF SCIENCE EDUCATION IN TWO-YEAR COLLEGES	A-1
В	SOURCE FOR SELECTION OF A SAMPLE OF TWO-YEAR COLLEGES	B-1
С	CORRECTION PROCEDURES FOR RECLASSIFYING COLLEGES	C-1
D	SUPPLEMENTARY TABULATIONS	D-1
E	SURVEY QUESTIONNAIRES	E-1
F	WEIGHTING PROCEDURES	F-1



APPENDIX A

Sample Design for Study of Science Education in Two-Year Colleges*



^{*}Reprinted from "Supporting Statement for the NSF Science Education OMB Package" (Feb. 6, 1979), Appendix, pp. 1-14. This study design was prepared in response to the instrument clearance request by the Office of Management and Budget; the design described here was used without substantive change.

APPENDIX

SAMPLE DESIGN FOR STUDY OF SCIENCE EDUCATION IN TWO-YEAR COLLEGES

Major Goals of Survey from Point of View of Determining Sample Design

The survey will examine the status of science education in two-year colleges in a number of different ways. The sample design will attempt to minimize the sampling errors applicable to major analyses that are contemplated, subject to limitations arising from two sources. The first source is obviously the budget for the study which establishes the maximum number of sample units that are possible. The second source arises from the fact that there are multiple kinds of analyses planned, and there is no sampling strategy that simultaneously minimizes the sampling errors for all the analyses. Some compromises are thus necessary. The conflicts in the goals and the compromises we propose to follow are described below.

1.1 General Analytic Issues Affecting Sample Design

In examining the information needs leading to the study, it is clear that three separate types of units of analysis exist - the school, the faculty, and students. The schools determine the policies followed, either on their own or as arms of the States. It is important to obtain data on the faculty teaching science courses; on their training, how their education relates to the specific courses they teach, etc. In regard to students, there are important questions for which data are needed: to what degree are "special" or nonmatriculated students influencing course selection; does matriculation in recognized programs still mean anything distinctive in two-year colleges; what motivates the students to take the science, wrses in which they are enrolled.



The study will thus require three kinds of respondents and consequently three populations to be sampled. A nested sample design is a particularly efficient method for carrying out such multiple bjectives. In the present context, this involves first selecting a sample of schools, selecting a sample of the science faculty within the designated schools, and finally selecting students from those taking courses taught by the teachers in the sample. Part of the efficiency is due to economics resulting from the simpler administrative needs from such a design - the sampling is simplified, and less collage personnel have to be contacted. A second important advantage of a nested design is the ability to correlate information from the various respondent categories. For example, it will make it possible to cross classify characteristics of students by the characteristics of schools, or faculty.

The sample sizes planned are 200 schools, 1,000 faculty members, and 4,000 students. These sample sizes are dictated partly by the budget for the study and partly by the analytic needs. The classifications of schools for which separate data are to be shown will contain only a few categories, in some cases two groups, in others five or six groups. A modest size sample is enough to produce such statistics with reasonable reliability. More elaborate classifications are planned for faculty members, and even more detailed ones for students. Consequently, the larger samples are necessary for these respondent groups. Later sections of this report will describe the technique to be used in selecting these samples.



1.2 <u>Tabulations in Which School is Unit of Analysis and</u> Those with Student as Unit of Analysis

Both types of studies are planned. Some tabulations will contain distributions of the number of schools having certain characteristics relating to science education. In such tabulations, schools are treated as equivalent units of analysis, and equal probability selection is normally the best strategy. Other types of tabulations will concentrate on students, for example, the number of students taking particular courses in science, the number who expect to go on to a four-year institution, etc. For those kinds of statistics, the most effective strategy is usually to select schools with probability proportionate to size (PPS), and subsample students within the schools in such a way as to achieve equal probability of selection for students.

It is obvious that both kinds of sampling methods cannot be applied in a single survey. A compromise sampling technique that is usually applied when there are such conflicting goals is to select with probability proportionate to the square root of size. This is not an optimum strategy for either analyses of schools or students but will produce reasonably small sampling errors for both kinds of statistics, whereas using either PPS or equal probability of selection will create quite large sampling errors for the groups for which it is not optimum. We, therefore, plan to use probability proportionate to the square root of size for the selection of the sample schools.



1.3 School Classifications of Particular Interest

There will be a number of ways in which schools will be classified for separate analyses. The two of prime importance are:

- (a) Public versus private schools; and
- (b) Technical schools versus other schools.

Private schools constitute about 16 percent of all schools. Technical schools account for an even smaller proportion of schools - about ten percent. If the average size of private and technical schools are about the same as all schools, the total sample of 200 schools will contain about 32 private schools and 20 technical schools. However, these schools tend to be below average in size and their representation in the sample will thus be ever smaller.

We plan to insure that there is a minimum of 20 to 25 sample schools for each class to be analyzed separately. If it appears that straight application of probability proportionate to the square root of size will not produce a sufficient sample for both of these groups, they will be established as a separate stratum which will be sampled at a higher rate to guarantee that at least 20-25 sample cases are selected.

1.4 Size Class Analysis

Another type of school classification that will be of importance in the analysis is a breakdown by size. At present, we contemplate the major analyses of schools by enrollment size classes, to be for the following classes:



i j

Under 1,500 1,500 - 7,499 7,500 and over

As is the case for the type of school analysis, we plan to select the sample in such a way as to insure a mimimum of about 40 to 42 schools in each of the three size categories to be used for analysis.

1.5 Other School Classifications

There are several other types of school classifications that are planned, geographic tabulations by region of the country tabulations by population density such as schools inside or out of SMSA's, and possibly others. Sample size will not be a limiting factor for these breakdowns and as a result, it is not necessary to increase sampling rates for any subgroups to enable such analyses to be made. To the extent possible, stratification will be used to improve statistics for these additional classifications, but no other special procedures are planned.

1.6 Faculty and Student Classification

It is imporant to analyze separately the following five groups:

- 1. Social Science;
- 2. Mathematics, statistics and computing;
- Life sciences;
- 4. Physical sciences;
- 5. Engineering and technological.



A-7

To the extent possible, the sample of faculty and students should be approximately equal for groups 1, 2 and 5 above, and with a larger sample for the natural sciences. In the natural sciences, about half the sample should be students in life sciences, and about half physical sciences.

The requirement for approximately equal size samples in the science categories will have to be combined with two other sampling requirements, important for statistical efficiency and administrative control. One requirement is that there should be approximately equal-probability samples of both faculty and students within each of the five science groups. The second is that it is desirable to have about equal workloads within each sample school. It is unlikely that all of these requirements can be met exactly. The sampling method we plan to apply in order to come as close as possible to meeting these requirements is described in Section 3 of this report.



2. SAMPLING METHODS USED TO SELECT COLLEGES

2.1 Sampling Frame

The sampling frame will be the most current list of schools in the records of the American Association of Community and Junior Colleges (AACJC). A check of the various lists possible has convinced us that this is the most complete list available.

The AACJC list contains the following information that can be used for stratification and assignment of measures of size:

State;

Number of students enrolled; Private or public school; and Technical school or other.

2.2 Stratification

Prior to sample selection, the AACJC file will be stratified in several ways. One reason for the stratification is to permit different sampling rates to be applied. A second reason is to improve the efficiency of the sample. There will be three stages of stratification:

(a) The first stage will be a four-way stratification consisting of private schools versus public schools, and within each of these, technical schools versus other;



(b) The second stage will be an enrollment size class breakdown within each of the four classes above. The size classes are:

> Under 500 500 to 1,499 1,500 to 2,499 2,500 to 4,999 5,000 to 7,499 7,500 to 14,999 15,000 and over

(c) The third stage will not constitute stratification in the way it is usually carried but will provide the basis for geographic stratification. It will consist of sorting the file by State, within each stratum identified as a result of (a) and (b). The States will be arranged in geographic order. As will be indicated later, a systematic sample is planned, that is one in which every nth case within a stratum is selected. Sorting the schools in State order will then automatically provide very detailed geographic stratification.

Counts will be prepared of the number of schools and the number of enrollees in each of the 28 strata resulting from (a) and (b). These counts will provide the data necessary to determine the sampling rates.

2.3 Allocation of Sample to 28 Strata

The determination of the sample size for each of the 28 strata will be done in several stages. The first stage is to calculate preliminary sampling rates for each of the seven size classes.

In Section 1.3, it was stated that school sampling would be with probability proportionate to the square root of size. This kind of sampling can be carried out in two ways.



One is to assign measures of size to each unit (in the present study, the measure would be square root of enrollment) and use standard methods of selection with probability proportionate to measure of size. The second way is to stratify the frame by size; treat all units within a stratum as if it had the average measure of size in the stratum, determine probabilities of selection so that they vary according to the square root of the average measure of size of the strata, and select units with equal probability within strata using the calculated probabilities of selection. We plan to use the second method. It does not provide exact probabilities proportionate to the square root of size but is a close approximation. It is an unbiased procedure, and its advantage is that it has more flexibility than a straight PPS selection method.

With this type of sampling procedure, the sampling rate in each size stratum is:

$$r_{i} = \frac{200(S_{i}/N_{i})^{\frac{1}{2}}}{\Sigma(S_{i}N_{i})^{\frac{1}{2}}}$$

where

200 is the total sample size;
Si is the number of students in the ith size stratum; and

N; is the number of schools in the ith stratum.

The sample size in each stratum will be

$$n_{i} = r_{i}N_{i}$$

$$= \frac{200(S_{i}N_{i})^{\frac{1}{2}}}{\Sigma(S_{i}N_{i})^{\frac{1}{2}}}$$



The second stage will be to examine the preliminary sample sizes for each analysis group, that is for each of the three size class listed in Section 1.4, for private and public schools, and for technical and other schools. (The total for each of these groups will be examined, not the cross-classifications of these groups.) If there are 20 or more sample schools in each group, no change in the preliminary sampling rates will be necessary. If t e sample sizes for some groups are below 20, the sampling rates in those groups will be increased to provide about 20 to 25 cases. The rates for other groups will be reduced to retain the 200 sample sizes after the new rates have been applied to make sure some other group has not been brought down to below the 20 level, and if so, to readjust the sampling rates again. Several iterations of this type may be necessary. The final sampling rates and sizes will be the ones established in the final iteration.

2.4 Sample Selection Methods

Once the sampling rates have been established, a systematic sample of schools will be selected in each stratum. For each stratum, a random number will be selected equal to less than the sampling interval (i.e., the reciprocal of the sampling rate). This random number will determine the first school selected. Every nth case following will then be selected, where n is the sampling interval.

In practice, we plan to select about 10 percent more schools in each stratum than required by the allocation described in Section 2.3. The additional sample schools will be held in reserve, and only used if some unusual nonresponse pattern develops. In that case the sample may have to be supplemented in some strata. The reserve sample will constitute a random selection within strata and can thus be used for the supplementation.



3. SAMPLING METHODS FOR FACULTY AND STUDENTS

As indicated earlier, we plan to select a sample of about 1,000 teachers and 4,000 students. More specifically, we will select a sample of 1,000 science classes at the 200 sample schools. The instructors for the sample classes will then be the sample faculty. Within each class four students will be randomly selected to create the student sample.

3.1 Selection of Classes and Teachers

An Initial sample will be selected with the following characteristics:

- (a) The total sample size will be 1,000 classes, consisting of about 200 classes in each of the five fields of science
- (b) Within each of the five fields, the sample will be selected with equal probability.

These goals will be achieved by carrying out the sampling procedure in the following way. Counts will be prepared of the number of classes in each school, in each of the five fields. Let C_{ij} be the number of classes in the j^{th} school and i^{th} field. Let the probability of selection of the j^{th} school be P_j . The sampling rate within the schools will be denoted by r_{ij} . (Note that different sampling rates will be used for the various field, within each school.) The overall probability of selection of any class is the product of the probability of selecting the school and the probability of selecting the class, when the school is selected. We want these to be equal for each field. Thus, $r_{ij}P_j$ should be independent of j and equal to r_i . Thus,



$$r_{ij}^{p} = r_{i}$$
 and

$$r_{ij} = r_i/P_j$$
.

In order to obtain the value of r_i , we use the fact that the sample size for the field should be n_i . The sample size will be the result of applying the sampling rate r_{ij} to the number of classes, C_{ij} . Consequently,

$$r_{i} = \frac{n_{i}}{\sum C_{ij}/P_{j}}$$

Sampling at these rates will satisfy the three conditions stated earlier. However, it will not control the sample size within school. The average number of sample classes per school will still be five, but there may be considerable variation from school to school. There is no way of simultaneously equalizing the total sample size per school and the overall sampling rates. From the point of view of statistical reliability, it more important to have self-weighting samples than to have equal workloads. Unfortunately, either very large or very small workloads create problems in administering the program.



We plan to keep the variation in workloads within limited bounds by identifying extreme situations and adjusting the sampling rates and sizes to keep within these bounds for most schools. A final decision on the width of the bounds has not yet been reached, but it is likely to be a range of about three to eight. In effect this would mean that in a school with less than three sample cases, the sample would be increased to three, and if there are more than eight, there would be subsampling to bring the number down to eight.

These adjustments in sampling rates are likely to result in some deviation from 1,000 in the total sample size. Care will be taken to insure that the final sample size will remain close to 1,000.

The sample classes will automatically identify the sample teachers. In a few cases, the same teacher may be identified in two or more sample classes. There will be no substitutions in these situations. The actual number of teachers in the sample may therefore be a little under 1,000.

It should be noted that the procedures described in this section do not guarantee a minimum sample size for each of the categories of schools listed earlier. We do not anticipate any serious problems of this type. The probabilities assigned to the schools and the plans for supplementing small workloads are likely to provide a sufficient sample for each school category. However, before data collection begins, we will prepare counts of sample classes, by school category. If necessary, additional adjustments in the sample will be made.



3.2 Selection of Student Sample

Within each sample class, four students will be randomly selected. In those cases there two classes identified the same teacher, both classes will be retained for the student sample. The student sample will therefore remain at the level of about 4,000 even if the number of teachers falls somewhat below 1,000.

The sample selection will be carried out in the school. The students in each class will be listed in some simple sequence, e.g. alphabetically, by assigned number, or in some similar natural order. The school staff carrying out the project will then refer to a table, supplied to them by Westat, which will indicate which students are to be included in the sample.



21

APPENDIX B

Source for Selection of a Sample of Two-Year Colleges



APPENDIX B

SOURCE FOR SELECTION OF A SAMPLE OF TWO-YEAR COLLEGES

Given the study design, a listing of two-year colleges had to have the following characteristics:

- a. Contain all public and private colleges offering two-year degrees, excluding proprietary institutions, since these were not surveyed.
- b. Contain the following information in clear form for each college:
 - Name, address, and chief executive officer;
 - Type of institution -- comprehensive or technical;
 - Type of control -- public or private;
 - Locus of control -- state agency, multicampus local system, university branch, single unaffiliated campus; and
 - Student enrollment -- full- plus part-time enrollment for credit.
- c. Contain recently collected information, particularly for student enrollment and preferably for the academic year 1978-79, since the survey was to take place in Spring 1979.
- d. Indicate subsidiary campuses for college systems, listing each separately so that all campuses have an equal chance for selection.



listings used by book publishers. However, only two sources appeared to be potentially useful in meeting the criteria listed above. They are:

- The <u>Directory of Community</u>, <u>Junior</u>, and <u>Technical</u> <u>Colleges</u>, issued annually by the American Association of Community and Junior Colleges (AACJC). Although AACJC is the professional organization for two-year colleges, the directory is not a membership list; it does, however, indicate membership in AACJC. The listing is updated annually through a survey each September. The new directory is published by February, so that information is current for the academic year of publication. Multicampus systems and state systems are listed. Private colleges are listed, but only those that are nonprofit. This source initially was evaluated using the 1978 edition, with data collected for the 1977-78 school year.
- The Education Directory, Colleges and Universities, 1977-78, issued by the National Center for Education Statistics (NCES). This directory lists all degree-granting institutions at all levels for which survey data were received. The listing available to Westat for the present study was compiled from data collected in May 1977 as part of the HEGIS package mailed out at that time. State agencies supplied a large part of the data from state records or from intrastate mailings and coordination of responses. Since the compilation of this list was part of the annual HEGIS statistical survey, the desire was to minimize the burden to individual institutions, although some direct correspondence with colleges occurred when necessary. To be listed in this directory, colleges must be accredited by appropriate agencies, have preaccreditation status, or have their credits accepted by at least three accredited institutions to which their students may transfer.



Included among the two-year colleges in this directory are proprietary colleges and those operated for profit. Although data collection for this edition was completed in November 1977, the information was current for the academic year beginning September 1976.

While many of the same two-year colleges appear in both of these directories, the overlap is far from complete. One major difference is the inclusion by NCES of colleges operated for profit; another is the lower probability of NCES contacting private colleges through its data gathering procedures. AACJC is more likely to be in touch with private colleges, since many of them are AACJC members, and is more likely to reach them with survey forms. Examination of listings for several states shows the NCES directory to be deficient in listings for private colleges that are nonprofit. NCES' directory also contains fewer public colleges than does AACJC's, possibly because the NCES survey forms are not mailed directly to colleges. Some discrepancies in classification of colleges also may be attributable to use of the secondary source (state agencies) by NCES. Finally, the NCES directory is less complete in its listing of branch campuses of multicampus colleges. Comparing listings of the two-year colleges in the two directories, we derived the following totals:

	AACJC (1977)	NCES (1976)
Publicly controlled	1,037	925
Independent (privately controll	ed) <u>198</u>	249*
TOTAL	1,235	1,174*

^{*}Includes undetermined number of independent colleges operated for profit and not desired for Westat's study.



While the discrepancies among the numbers of private colleges may be explained easily, discrepancies in numbers of public colleges are more problematic. The year's difference in data collection hardly explains a 12 percent differential, although AACJC does note a 2 percent increase from 1976 to 1977 in the number of public colleges, as well as some changes in names and control and some college closings. One state in which NCES shows more public colleges than AACJC is Pennsylvania (38 compared to 17). This difference arose from the listing of the two-year branch campuses of Pennsylvania State University (18) and the University of Pittsburgh (3). Because NCES went directly to the Pennsylvania state agency, which controls these two university systems, an apparently complete listing was received, whereas AACJC received no replies directly from the branch campuses. Scattered through the directory are a few other colleges reported only in the NCES listing.

Despite NCES' reliance on state agencies, in several other states complete listings of large groups of state-controlled two-year colleges were not obtained. AACJC shows more campuses than NCES in these states: Alabama, 32 to 20; Kentucky, 15 to 1; Wisconsin, 51 to 17. In many other states there are smaller discrepancies in favor of AACJC.

Each directory shows enrollment information current for the year of data collection, as well as the state and locus of control of each college. Neither directory distinguishes technical institutes from comprehensive colleges, but this information was also obtainable.

Both organizations had data tapes that could be made available to Westat. NCES information was current only for the year 1976-77, while the AACJC tape contained the listings for its 1978-79 survey, the same year in which Westat's survey was to be



conducted. An agreement was reached with AACJC for release of the portion of their tape that contained only the elements essential for this study; those portions that AACJC wished to maintain as confidential thus were protected.

The AACJC directory was more suitable for this survey and is the source from which the sample of colleges was drawn.



APPENDIX C

Correction Procedures for Reclassifying Colleges



APPENDIX C

CORRECTION PROCEDURES FOR RECLASSIFYING COLLEGES

The <u>Directory of Community</u>, <u>Junior</u>, and <u>Technical Colleges</u>, 1979 edition, published by the American Association of Community and Junior Colleges (AACJC), was used to draw the initial sample of 240 colleges for this study. The directory contains information on 1,245 colleges, as well as the separate campuses of multicampus institutions, including student enrollment (the sum of full- and part-time students), source of control (private or public), type of program (comprehensive or technical institute), and geographic location. All of these elements were used in selection of the sample for this study.

The directory was not yet in print when information was needed to select the sample, but all forms used by AACJC for the collection of data from colleges during the fall of 1978 had been received by that organization, and data processing had been finished. AACJC graciously permitted Westat to use the tape containing 1979 directory information, in an edited form to protect what AACJC considered to be confidential information.

The procedure followed by this study was to select an initial sample of 240 colleges with the help of the directory and then to request each of these colleges to participate, with the expectation that 200 would accept. The colleges also were asked for copies of their catalogues, class schedules for the spring semester or quarter, and designation of a local coordinator to direct the data collection on each campus. Peturns from the 185 colleges agreeing to participate revealed some discrepancies in information contained in the directory. The catalogues for a number of colleges showed more than one campus not listed in the



directory. The program offerings of several colleges more closely resembled those of technical institutes than of comprehensive colleges, as their directory listings indicated. It also was discovered that some colleges calling themselves technical institutes really offered comprehensive programs, although their program emphasis was heavily technical. These discrepancies were probably attributable to inaccurate reports sent to the directory by the colleges themselves during the Fall 1978 survey by AACJC.

Some of the responding colleges showed more than one campus of which we were previously unaware. In these cases, the college sel cted which of its several campuses would respond to the survey, in keeping with Westat's original request that response be confined to the individual campus level. This situation, however, led to discrepancies in some cases between enrollment figures in the directory for the entire college and actual enrollment at the individual campus participating in the study. Fortunately, changes in classification of college size were not required in most of these cases, since the designated campus was usually the largest, and the categories used in the study to describe college size were broad enough to accommodate the change.

One other discrepancy came to light. Included in the institutional questionnaire was a question on numbers of students enrolled, inserted mainly to identify the multicampus colleges described above. A large number of responses to this question yielded figures different from those listed in the directory, enough so to necessitate reclassifying a few institutions by four size categories and many others by one or two categories. Telephone calls were made to the registrars of these campuses. In some cases the questionnaire responses were erroneous, apparently having been inaccurate estimates by local coordinators rather than official enrollment figures. In most cases, however, the registrars affirmed the questionnaire responses.



25

As a result of these reviews, the colleges in the responding sample of 1168 campuses were reclassified. The corrected sample showed the following changes from the information originally obtained from the directory:

Type of change	Number of colleges
Add campus designation	13
From comprehensive college to technical institute	9
From technical institute to comprehensive college	2
Charge in student enrollment category	26
Change from private to public	1



APPENDIX D

Supplementary Tabulations



INSTITUTIONAL QUESTIONNAIRE DATA

List of Figures

Figure		Page
IQ-7*	Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching	D-7
IQ-13(1)	Percent distribution of administrators indicating highest priority student needs, by type of need and type of college	D-19
IQ-13(2)	Percent distribution of administrators indicating first, second, and third priority student needs, by type of college and type of need	D-24
	FACULTY QUESTIONNAIRE DATA	
	List of Tables	
<u>Table</u>		
FQ-25(1)	Percent distribution of full-time faculty reporting positive measures to encourage enrollment of women, by type of measure, type of college, and educational field	D-55
FQ-25(2)	Percent distribution of full-time faculty reporting positive measures to encourage enrollment of racial/ethnic minorities, by type of measure, type of college, and educational field	D-56
FQ-25(3)	Percent distribution of full-time faculty reporting positive measures to encourage enrollment of handicapped students, by type of measure, type of college, and educational	

^{*}Appendix table and figure numbers indicate the questionnaire and questionnaire item number from which the data were derived. For example, Figure IQ-7 is based on administrators' responses to question 7 on the institutional questionnaire; data displayed in Tables FQ-25(1) and FQ-25(2) were taken from responses to question 25 on the faculty questionnaire. Reprints of the institutional, faculty, and student questionnaires are companied in Appendix E.



field

D-57

FACULTY QUESTIONNAIRE DATA (Continued)

List of Tables (Continued)

<u>Table</u>		Page
FQ-26	Full-time faculty members' assessment of provisions for physical access of handicapped students to science and technology classes, by degree of access provided, type of college, and educational field	D-58
	List of Figures	
Figure		
FQ-24(1)	Percent distribution of faculty indicating highest priority student needs, by type of need and type of college	D-29
FQ-24(2)	Percent distribution of faculty indicating highest priority student needs, by type of need and educational field	D-34
FQ-24(3)	Percent distribution of faculty indicating first, second, and third priority student needs by type of college and type of need	D-42
FQ-24(4)	Percent distribution of faculty indicating first, second, and third priority student needs, by educational field and type of need.	D-47
FQ-27	Faculty members' estimates of the degree of their responsibility for planning individual courses: average ratings, by area of responsibility, educational field, and type of college	D-59
FQ-29	Faculty members' estimates of the degree of their responsibility for planning curricular programs: average ratings, by area of responsibility, educational field, and type of college	D-66
FQ-33	Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college	D-70



STUDENT QUESTIONNAIRE DATA

List of Figures

Figure		Page
SQ-27	Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college	D-89
SQ-(A)	Percent distribution of students taking science courses and students majoring in science, by racial/ethnic group and sex	D-99



D-5 34

re IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching

Knowledge of content

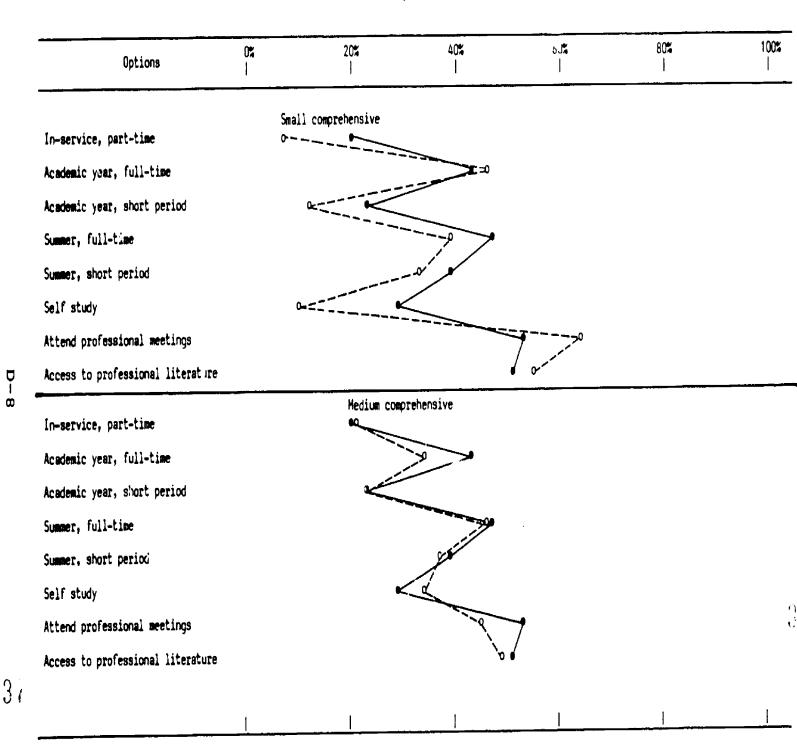
Options	0% 	2 0% 	40% 	60% 	80%	100%
vice, part-time		_	Technical insti	tutes		
ic year, full-time						
ic year, short period		•	0			
full-time				r~ 0		
short period			200			
tudy						
professional meetings						
to professional literature						
rice, part-tire		Private	colleges			
c year, full-time			\			
c year, short period		0				
full-time		_ 	~~~			
short period						
udy		0	~			
professional meetings				→		
to professional literature			or r	•		
	1	!	_1			
				Legend:		
j				•	Total, all colleges co	mbined
••				00	Type of college	G



D_I

Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Knowledge of content





Lec Total, all colleges combined ----o Type of college

D-5

Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Knowledge of content

Options	0% 	20%	40 % 	60% 	80 % 1	190
In-service, part-time		Large co	omprehensivo			
Academic year, full-time						
Academic year, short period						
Summer, full-time				- -q		
Summer, short period			•	_\ _\		
Self study		ę	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			
Attend professional meetings				·~Q#		
Access to professional literature				√ ₀		

legend:

Outal, all colleges combined

Outal, all colleges combined



Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Teaching methods

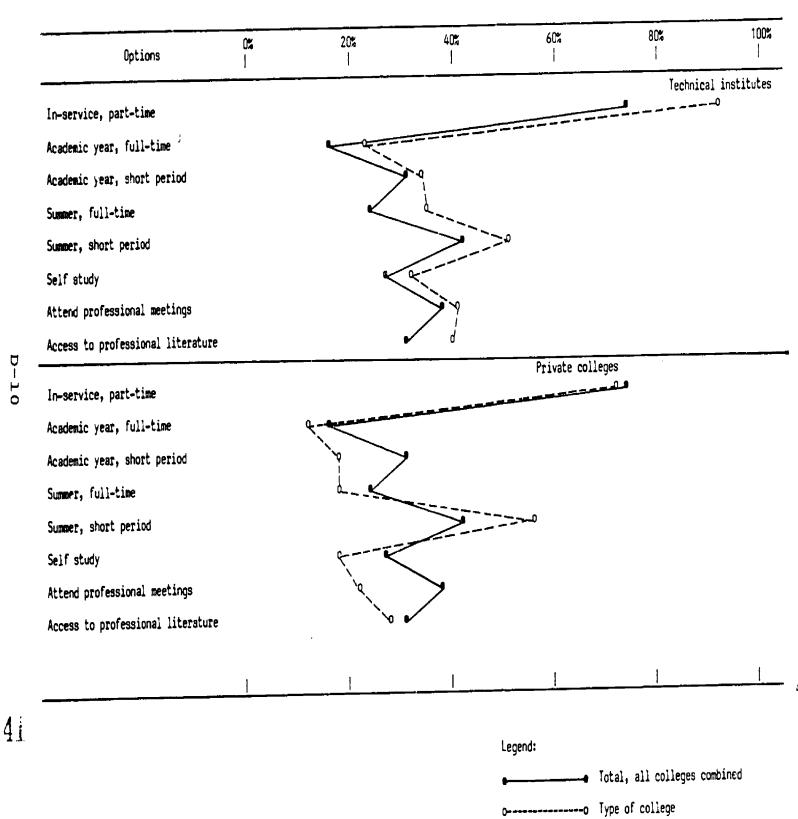
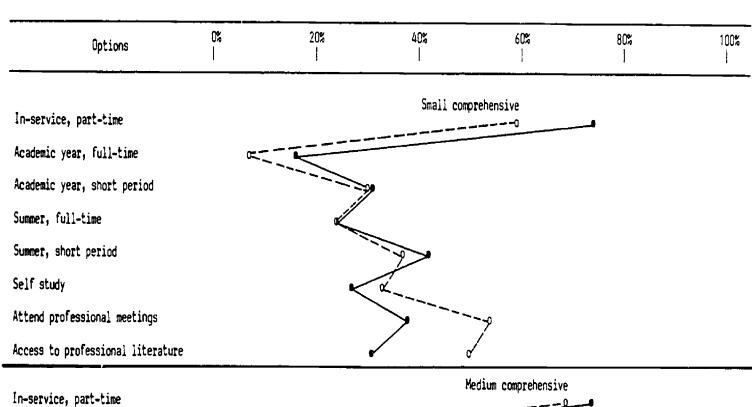




Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Teaching methods



Academic year, full-time

Academic year, short period

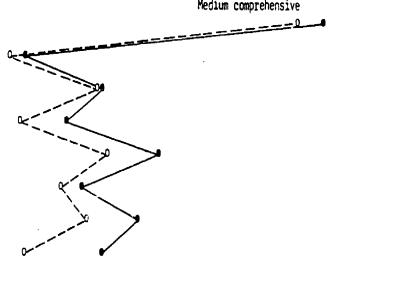
Summer, full-time

Summer, short period

Self study

Attend professional meetings

Access to professional literature



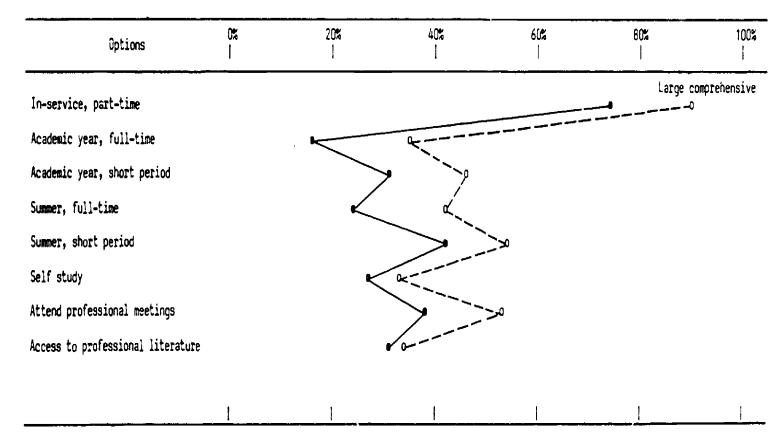
Total, all colleges combined o----- Type of college

Legend:

D-12

Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Teaching methods



Legend:

Total, all colleges combined

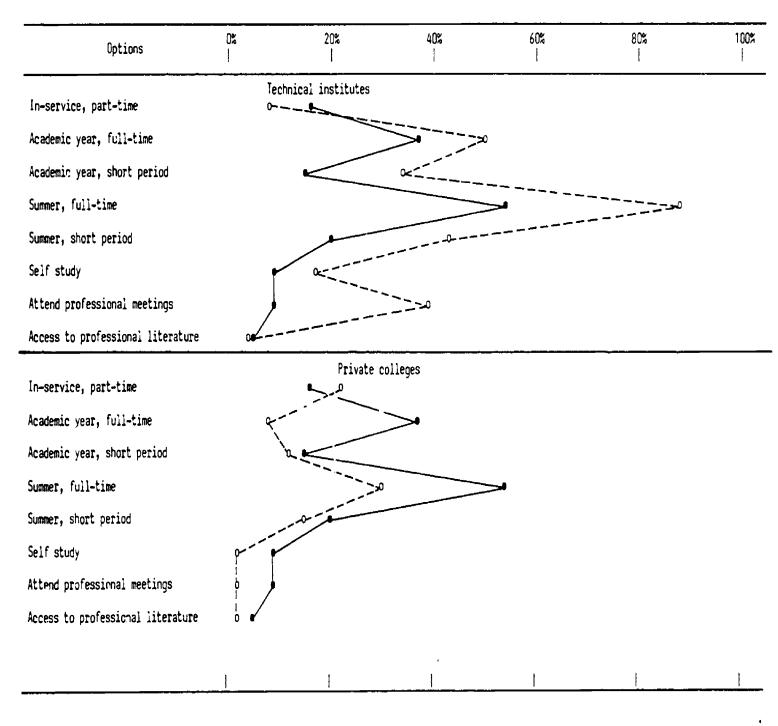
Type of college





Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Practical work experience



Legend:

Total, all colleges combined

Type of college



Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Practical work experience

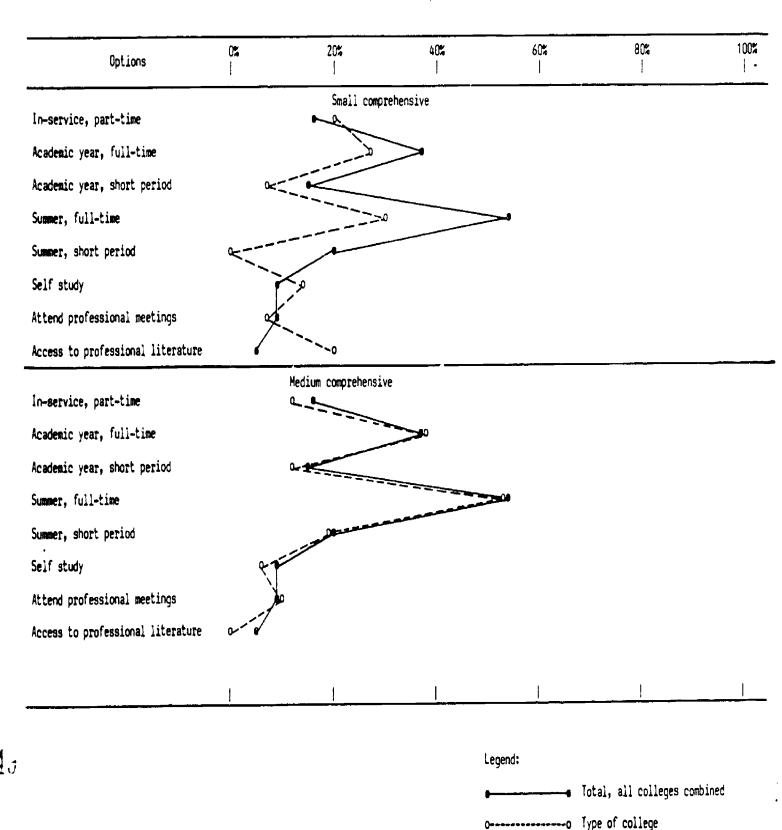
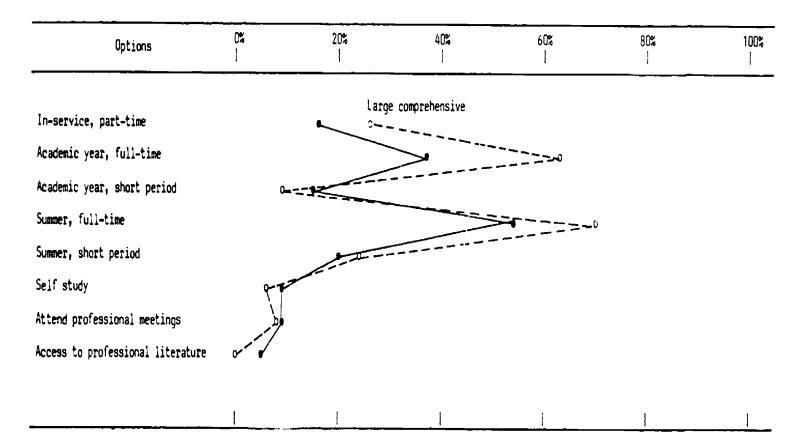




Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Practical work experience



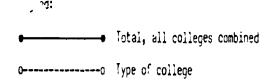
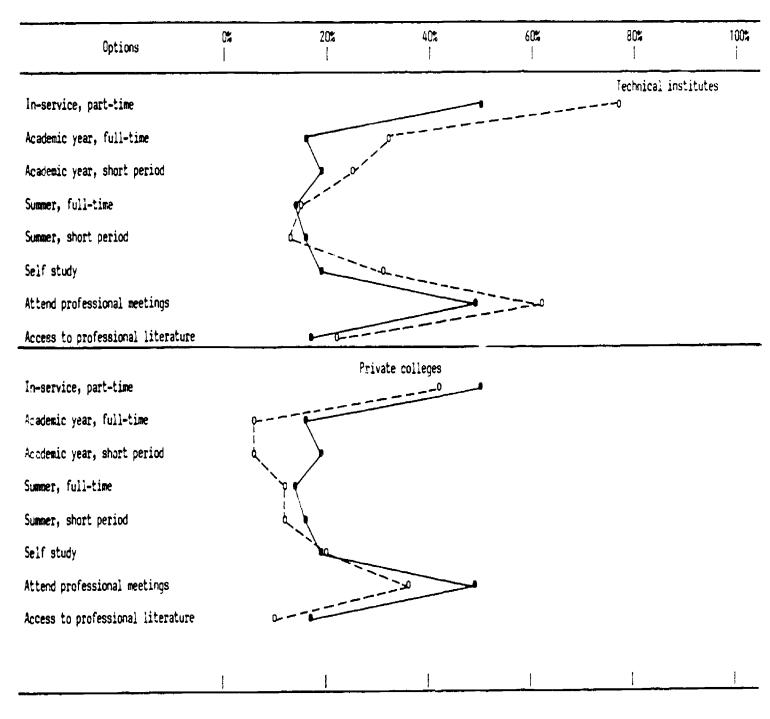




Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Attitudes toward teaching



50

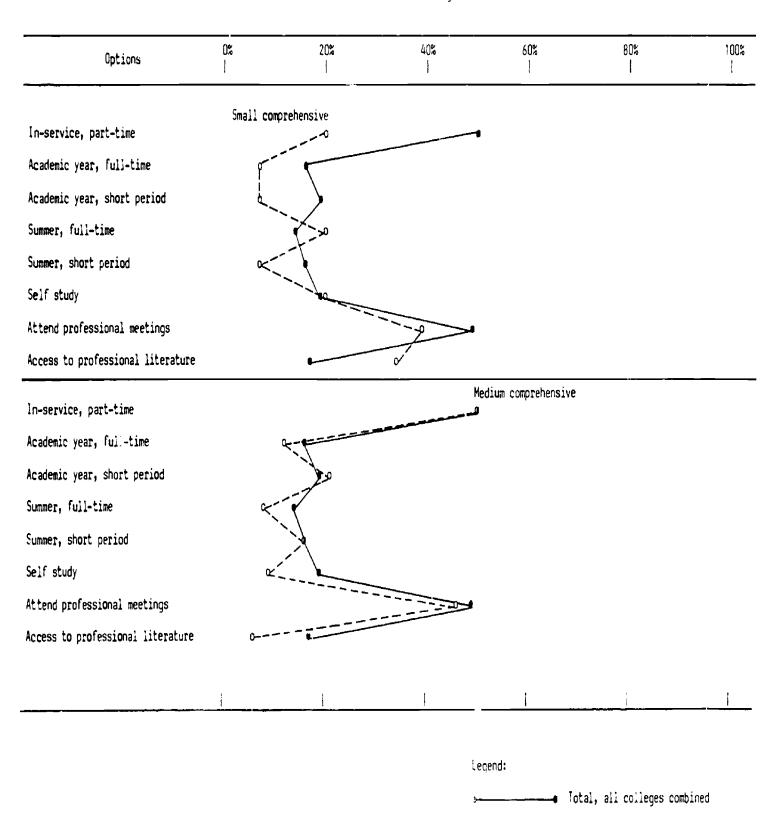
Total, all colleges combined

O-----
Type of college



Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Attitudes toward teaching

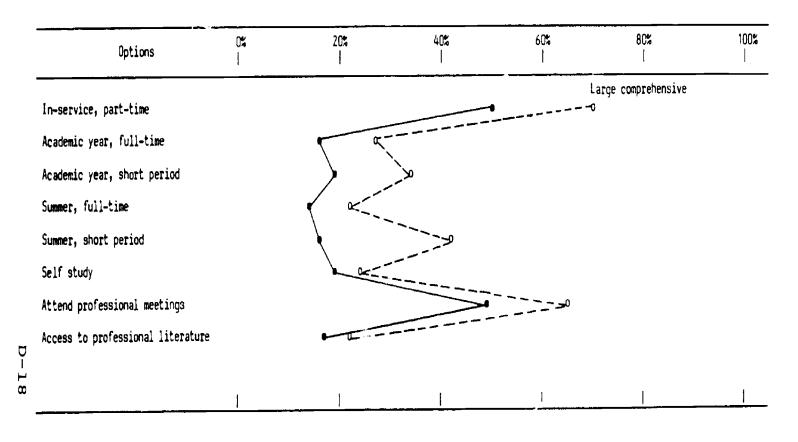


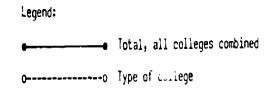


------ Type of college

Figure IQ-7. Percent distribution of administrators' preferences for faculty improvement: average percents for each type of college compared with all colleges combined, by improvement option and aspect of teaching (continued)

Attitudes toward teaching







57

Figure IQ-13(1). Percent distribution of administrators indicating highest priority student needs, by type of need and type of college

Student needs	0% 	10% 	20% 	30% 	40% 	50% 	60%	70% !	Percent
Basic skills Type of college Language skills									
Technical institutes	I								(49)
Private colleges		Television (Tager			****			1	(70)
Small comprehensive	14, 4, 23,	A size in a					_		(57)
Medium comprehensive		gergal yai eg							(47)
Large comprehensive			ger di i e e						(70)
TOTAL					<u> </u>				(56)
Math skills									
Technical institutes		1.371,11							(30)
Private colleges									(12)
Small comprehensive	villat.	j energy							(12)
Medium comprehensive	12.00		Mayor III						(35)
Large comprehensive)						(16)
101 1									(24)
Study skills									
Technical institutes									(19)
Private colleges		77.							(18)
Small comprehensive			_						(17)
Medium comprehensive									(12)
Large comprehensive									(5)
TOTAL		Marie							(14)
	,	ı	•						



Figure IQ-13(1). Percent distribution of administrators indicating highest priority student needs, by type of need and type of college (continued)

Student needs	0% 	10%	20% 	30% !	40% 	50 %	60%	70% 	Percent
sic skills Type of college Manipulative skills for laboratory work									
Technical institutes	ì								(0)
Private colleges	ı								(0)
Small comprehensive	1								(0)
Medium comprehensive	1								(0)
Large comprehensive									(3)
TOTAL	1								(0)
Counseling on need for basic skills									
Technical institutes									(2)
Private colleges	l								(0)
Small comprehensive		AND MARKET							(14)
Medium comprehensive		j							(6)
Large comprehensive		3							(6)
TOTAL									(6)
er needs									
Opportunities for practical experience									
Technical institutes		- (4 0, 2, 1) 2							(22)
Private colleges	i								(0)
Small comprehensive			98. j.						(41)
Medium comprehensive	20.88								(19)
Large comprehensive									(24)
TOTAL			,						(27)

Figure IQ-13(1). Percent distribution of administrators indicating highest priority student needs, by type of need and type of college (continued)

Student needs	0%	10% 	20% 	30% 	40% 	50% 	60% 	70% 	Percent
Other needs Type of college Counseling for careers									
Technical institutes				<u></u>					(26)
Private colleges					_1				(36)
Small comprehensive									(17)
Medium comprehensive	10 180	Pour Alexander	īy .						(23)
Large comprehensive									(27)
TOTAL		#1 75 2							(25)
Courses offered more frequently then once a year	ear_								
Technical institutes	1 / 2 .								(8)
Private colleges	A 2	40							(10)
Small comprehensive	right Sp								(23)
Medium comprehensive	1 4 132.	Admin t							(10)
Large comprehensive		-27							(8)
TOTAL									(12)
Restructuring of courses and/or laboratory practic	:es								
Technical institutes									(15)
Private colleges									(0)
Small comprehensive	1								(0)
Medium comprehensive									(19)
large compre haive			_1						(17)
TOTAL			-						(12)
									
· - · · · · · · · · · · · · · · · · · ·	!	1			1	1			



Figure IQ-13(1). Percent distribution of administrators indicating highest priority student needs, by type of need and type of college (continued)

		ı							
Student needs	0% 	104	20 % i	30%	40% 	50% 	60% 	70% 	Percent
Other needs Type of college Supplementary Learning materials									
Technical institutes	1	•							(9)
Private colleges	1								(0)
Small comprehensive	!								(0)
Medium comprehensive									(14)
Large comprehensive	3. 14 mg/y	l							(5)
TOTAL									(7)
Advanced courses									
Technical institutes	and the second	• •							(8)
Private colleges									(2)
Small comprehensive	tu des								(7)
Medium comprehensive		J							(6)
Large comprehensive	1								(0)
TOTAL									(6)
Access to library/ learning resources									
Technical institutes	3,4,57								(4)
Private colleges									(10)
Small comprehensive	1								(C)
Medium comprehensive	1								(0)
Large comprehensive									(3)
TOTAL									(2)
	<u> </u>			<u> </u>					



Figure IQ-13(1). Percent distribution of administrators indicating highest priority student needs, by type of need and type of college (continued)

	.,								
Student needs	0% 1	10% 	20%	30% 	48% 	50% 	60% 1	70% 	Percent
Other needs Type of college Access to laboratories									
Technical institutes		1							(6)
Private colleges	1								(0)
Small comprehensive									(0)
Medium comprehensive									(6)
Large comprehensive									(3)
TOTAL									(3)
Access to faculty									
Technical institutes	1								(0)
Private colleges	1								(0)
Small comprehensive]							(7)
Medium comprehensive	program								(6)
Large comprehensive	Nagari.								(5)
TOTAL									(4)
Honors courses									
Technical institutes	1								(0)
Private colleges									(6)
Small comprehensive	1								(0)
Medium comprehensive									(3)
Large comprehensive	<u></u> 1								(3)
TOTAL									(2)
	,	•	•	1	,	,	,		
						f	<u> </u>		



Figure IQ-1?(2). Percent distribution of administrators indicating first, second, and third priority student needs, by type of college and type of need

Technical institutes 100% 30% 40% 60% 04 20% Percent Student needs Basic skills (49, 25, 20) • Language skills (30, 41, 22) Math skills (19, 26, 22)Study skills (0, 8, 0)Manipulative skills (2, 32, 32)Counseling on need for basic skills Other needs (22, 16, 0)Opportunities for practical experience (26, 18, 0)Counseling for careers Courses offered more frequently than (8, 16, 16) once a year Restructuring of courses and/or (15, 4, 18)laboratory practices (3, 9, 7)Supplementary learning materials (8, 0, 0)Advanced courses (4, 0, 3)Access to library/learning resources Legend (6, 8, 8)Access to laboratories 1st Priority

2nd Priority

3rd Priority

*(1st, 2nd, 3rd priority)

(0, 4, 8)

(0, 0, 0)



 $\{\cdot\}$

Access to faculty

Honors courses

Figure 10-13(1). Percent distribution of administrators indicating tirst, second, and third priority student needs, by type of college and type of need (continued)

Private colleges 20% 40% 60% 8(1% 100% Student needs Percent Basic skills Language skills 70, 8, 12) • Math skills 112, 64, 24) Study skills (18, 26, 44) Manipulative skills (0, 0, 0) Counseling on need for basic skills 0, 0, 0 □ Olher needs N O Opportunities for practical experience ∫ (0, 6, 6) Counseling for careers (36, 0, 10)Courses offered more frequently than once a year (10, 16, 16)Restructuring of courses and/or laboratory practices (0, 26, 0)Supplementary learning materials (0, 0, 12)Advanced courses (2, 0, 0)Access to library/learn apprendurces Legend 10, 16, 0) Access to laboratories 1st Priority (0, 0, 20)Access to faculty 2nd Priority $\{0, 0, 0\}$ Honors courses 3rd Priority (5, 0, 0)*i1st, 2m. or unity)



Figure IQ-13(2). Percent distribution of administrators indicating first, second, and third priority student needs, by type of college and type of need (continued)

Small comprehensive ď05 100% 60% 0% 20% 40% Percent Student needs Basic skills (57, 19, 3) *Language skills (12, 41, 34) Math skills (17, 23, 39) Study smills (0, 0, 0)Manipulative skills (14, 2, 2)Counseling on need for basic skills Other needs (41, 20, 9)Opportunities for practical experience (17, 30, 14) Counsaling for careers Courses offered more frequently than (23, 13, 10) once a year Restructuring of courses and/or (0, 16, 14)laboratory practices (0, 0, 0)Supplementary learning materials (7, 0, 14)Advanced courses (0, 0, 0)Legend Access to library/learning resources (0, 0, 13)1st Priority Access to laboratories (7, 0, 0)2nd Priority Access to faculty (0, 7, 0)3rd Priority Hone & courses *(1st, 2nd, 3rd priority)



Figure IQ-13(2). Percent distribution of administrators indicating first, second, and third priority student needs, by type of college and type of need (continued)

Medium comprehensive

Student needs	0% 	20% i	40%	. 60%	8:	100% Percent
Basic skills						
Language skills					P	(47, 34, 10)
Math skills						(35, 33, 24)
Study skills	S 1 () ()					(12, 31, 43)
Manipulative skills						(0, 1, 5)
Counseling on need for basic skills	No. of the second		_			(6, 14, 14)
lther needs						
Opportunities for practical experience						(19, 11, 7)
Counseling for careers				<u></u>]		(23, 17, 14)
Courses offered more frequently than once a year						(10, 13, 14)
Restructuring of courses and/or laboratory practices						(19, 11, 10)
Supplementary learning materials	San San					(14, 14, 4)
Advanced courses		<u>[</u>				(6, 4, 5)
Access to library/learning resources		_ I		Legend		(0, 9, 7)
Access to laboratories				1st Priorit	у	(6, 4, 9)
Access to faculty				2nd Prior	٧	(6, 1, 0)
donors courses				3rd Priorit	y	(3, 4, 0)
	1	1	1	1	 *(1st, 2nd, 3r	priority)



Figure IQ-13(2). Percent distribution of administrators indicating first, second, and third priority student needs, by type of college and type of need (continued)

Large comprehensive 8C% 20% 40% 60% 100% 0,0 Percent. Student needs Basic skills (71, 18, 4) +Language skills (16. 46, 36) Math skills (5, 34, 40)Study skills (3, 0, 4)Manipulative skills (6, 15, 15) Counseling on need for basic skills Other needs (24, 9, 22)Opportunities for practical experience (27, 5, 2)Counseling for careers Courses offered more frequently than (3, 6, 5)once a year Restructuring of courses and/or (17, 22, 10)laboratory practices (4, 5, 10)Supplementary learning materials (0, 13, 0)Advanced courses M. V. Service Marie Co. (3, 7, 3)Legend Access to library/learning resources 1st Priority (3, 17, 16) Access to laboratories (5, 3, 3)2nd Priority Access to faculty (3, 2, 8)3rd Priority Honors courses

*(1st, 2nd, 3rd priority)



Figure FQ-24(1). Percent distribution of faculty indicating highest priority student needs, by type of need and type of college

Student needs	0% 	10%	20% !	30% i	40% 	50% !	60% 	70% 	Percent
sic skills Type of college Language skills									
Technical institutes									(31)
Private colleges		e la jaran e	7 1 4 1 PM	e e tra	7				(42)
Small comprehensive	200	es for tyrich	Paridine to enco	.,			_		(57)
Medium complenensive	1	W. C.		ge (syzt), mj. m					(38)
Large comprehensive	194 Jan			a u Williams					(41)
TOTAL			Section 1						(40)
Math skills									
Technical institutes	$\mathfrak{U}_{(2)}, \mathfrak{U}_{(3)}$	Baran ang ito	Walington Co.						(28)
Private colleges		2.5							(12)
Small comprehensive	. ertegy	X volument.							(14)
Medium comprehensive]						(16)
Large comprehensive			ı						(15)
TOTAL									(17)
Study skills									
Technical institutes									(28)
Private colleges		e grewent filte							(40)
Small comprehensive	4.770,	r esti Paridio	-200 VA						(21)
Medium comprehensive									(32)
Large comprehensive		istoria su a Selat	41 July 1	\supset					(28)
TOTAL									(29)
	- -			-					
	1		-	1		1	1	1	



Student needs	0% 	10% 	20% 	30% 	40% 	50% !	60%, !	70% 	Percent
skills									
e of college Manipulative skills for laboratory work									
Technical institutes									(4)
Private colleges									(0)
Small comprehensive	8								(1)
Medium comprehensive									(4)
Large comprehensive	Ø								(2)
TOTAL									(3)
Counseling on need for basic skills									
Technical institutes									(6)
Private colleges		!							(6)
Small comprehensive	19.64.500	9							(7)
Medium comprehensive									(10)
Large comprehensive									(12)
TOTAL	1.5								(10)
needs									
Opportunities for practical experience									
Technical institutes			1/4/2/23						(34)
Private colleges	- R								(21)
Small comprehensive		*							(21)
Medium comprehensive			24/1/1/1/2						(23)
Large comprehensive									(20)
TOTAL						•			(23)

Figure FQ-24(1). Percent distribution of faculty indicating highest priority student needs, by type of need and type of college (continued

Student needs	0% }	10%	20% 	30% 	40% 	50% 	60% 	70% 	Percent
Other needs Type of college Counseling for careers									
Technical institutes		,,,,,,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	• •						(20)
Private colleges									(8)
Small comprehensive			I						† 5)
Medium comprehensive		<u> </u>							(14)
Large comprehensive									(20)
TOTAL		by 1							(17)
Courses offered more frequently than once a year									
Technical institutes									(3)
Private colleges	1		_1						(17)
Small comprehensive									(3)
Medium comprehensive		,							(12)
Large comprehensive									(5)
TOTAL									(8)
Restructuring of courses and/or laboratory practices									
Technical institutes		1							(6)
Private colleges									(5)
Small comprehensive		<u> </u>							(6)
Medium comprehensive									(9)
Large comprehensive									(12)
TOTAL									(9)



Figure FQ-24(1). Percent distribution of faculty indicating highest priority student needs, by type of need and type of college (continued)

Student needs	0% !	10% !	20%	30%	40 % 	50% 	60% 	70% 	Percent
er needs Type of college Supplementary learning materials									
Technical institutes		3							(6)
Privata colleges	3.557								(4)
Small comprehensive									(11)
Medium comprehensive		 							(5)
Large comprehensive									(3)
TOTAL			j						(15)
Advanced courses			-						
Technical institutes									(3)
Private colleges	0								(1)
Small comprehensive									(12)
Medium comprehensive									(8)
Large comprehensive									(8)
TOTAL	<u></u>								(7)
Access to library/ learning resources									
Technical institutes		J							(5)
Private colleges	880, S								(6)
Small comprehensive		_							(3)
Medium comprehensive									(4)
Large comprehensive		1							(5)
TOTAL		•				1.44			(4)
I U I PE	■ \Ti's					. 1			

Figure FQ-24(1). Percent distribution of faculty indicating highest priority student needs, by type of need and type of college (contined)

				_				•	
Student needs	0% !	10%	20% !	30% !	40% !	50% 	60% !	70% !	Percent
her needs Type of college Access to laboratories									
Technical institutes									(3)
Private colleges	Ū								(1)
Small comprehensive	I								(0)
Medium comprehensive									(2)
Large comprehensive									(6)
TOTAL									(3)
Access to faculty									
Technical institutes	20,000								(5)
Private colleges									(6)
Small comprehensive									(2)
Medium comprehensive									(4)
Large comprehensive									(2)
TOTAL									(3)
Honors courses									
Technical institutes									(2)
Private colleges	<u> </u>	Ţ							(7)
Small comprehensive									(4)
Medium comprehensive									(2)
Large comprehensive									(5)
TOTAL									(5)
	1	l	1	i	<u> </u>		İ	!	
· · · · · · · · · · · · · · · · · · ·									



Figure FQ-24(2). Percent distribution of faculty indicating highest priority student needs, by type of need and educational field

Student needs	0% !	10%	20%	36%	40%	50% 	50% 	70% !	Percent
asic skills Educational field Language skills									
Introductory basingy	7,45	**************************************		Territo, 1860 (8.1)		s to the depth			(51)
Health sciences					3				(36)
Other life sciences									(34)
Physical sciences									(40)
Engineering and technology	3								(22)
Mathematics		* 2 2							(43)
Computer sciences	Tar Ship			enta / . j	(v., 1)				(41)
Social sciences					September 1980 Septem				(54)
TOTAL			•						(40)
Math skills									
Introductory biology	1								(0)
Health sciences			**************************************						(22)
Other life sciences									(9)
Physical sciences									(32)
Engineering and technology									(37)
Mathematics									(17)
Computer sciences				Special Control					(30)
Social sciences									(5)
TOTAL		<u> </u>	8						(17)
		,	_	,			•	,	

4 .2

'igure FQ-24(2). Percent distribution of faculty indicating highest priority student needs, by type of need and educational field (continued

Student needs	0%	10%	20% 	30% 	40% 	50% 	60%	70% 	Pendent
ic skills wcational field Study skills									
Introductory biology									(49)
Health sciences									(27)
Other life sciences			· .						(42)
Physical sciences									(19)
Engineering and technology									(22)
Mathematics									(27)
Computer sciences									(29)
Social sciences									(29)
TOTAL	- 8			5 4					(29)
Introductory biology Health sciences Other life sciences									(0) (7) (3) (7)
Physical sciences	· ــــــــــــــــــــــــــــــــــــ								
Physical sciences Engineering and technology									(5)
Engineering and									(5) (1)
Engineering and technology									
Engineering and technology Mathematics									(1)



Figure FQ-24(2). Percent distribution of faculty indicating highest priority student needs, by type of need and educational field (continu

Student needs	0% !	10%	20%	30%	40% 	50% 	60% 	70% -	Percent
aic skills ducational field Counseling on need for basic skills									
Introductory biology	1								(0)
Health sciences									(10)
Other life sciences		- 7. C							(11)
Physical sciences	1								(0)
Engineering and technology	# <u>*</u>								(9)
Mathematics									(12)
Computer sciences	1								(0)
Social sciences									(11)
TOTAL	Δ.								(10)
her needs									
Opportunities for oractical experience									
Introductory biology									(2)
Health sciences									(24)
Other life sciences	La Sh		in the second						(24)
Physical sciences									(19)
Engineering and technology					9				(36)
Mathematics									(22)
Computer sciences					r tips				(38)
Social sciences									(23)
TOTAL		_							(23)



Figure FQ-24(2). Percent distribution of faculty indicating highest priority student needs, by type of need and educational field (continued)

Student needs	0% 	10% 	20% 	30% 	40% 	50% 	60% 	70% 	Percent
her needs ducational field Counseling for careers									
Introductory biology									(22)
Health sciences			1						(21)
Other life sciences									(14)
Physical sciences	<u> </u>	<u> </u>	_1						(16)
Engineering and technology									(7)
Mathematics	1		<u> </u>						(18)
Computer sciences									(9)
Social sciences		e grand							(21)
TOTAL									(17)
Courses offered more frequently than once a year Introductory biology He lth sciences	[1						(22)
Other life sciences		 ,							(3)
Physical sclences									(11)
Engineering and technology	<u></u> ı								(4)
Mathematics									(15)
Computer sciences		<u> </u>							(8)
Social sciences									(3)
TOTAL	·								(8)





Figure FQ-2-(2). Percent distribution of faculty indicating highest priority student needs, by type of need and educational field (continued

Student needs	0% 	1 104	20%	30% 	40% 	50% 	50%	70% 	Percent
er needs									
cational field Restructuring of courses and/or laboratory									
practices	,								(12)
Introductory biology									(5)
Health sciences									
Other life sciences		x							(13)
Physical sciences									(6)
Engineering and technology	800	w							(11)
Mathematics									(11)
Computer sciences	AP . 4 4 6 5								(12)
Sc sciences									(8)
TOTAL									(9)
Supplementary learning materials									(9)
Introductory biology	and the								
Health sciences									(3)
Other life sciences	"Rised of E								(10)
Physical sciences									(2)
Enginee took									(6)
Mathewitic									(2)
Computer sciences									(5)
Social sciences									(4)
TOTAL									(5)

Figure FQ-24(2). Percent distribution of faculty indicating highest priority student needs, by type of need and educational field (continu

Student needs	0% 	10% 	20% 	30% 	40% 	50% 	60 % 	70% 	Percent
her needs ducational field Advanced courses						-			
Introductory biology				_					(27)
Health sciences									(5)
Other life sciences									(6)
Physical sci nces		Ì							(7)
Engineering and technology		_1							(8)
Mathematics									(5)
Computer sciences	1								(0)
Social sciences	1)							(7)
TOTAL	, ,	}							(7)
Access to library/learning resources	<u>1 (</u>								
Introductory biology Health sciences Other life sciences									(0) (6) (4)
Health sciences									(6)
Health sciences Other life sciences									(6) (4)
Health sciences Other life sciences Physical sciences Engineering and									(6)(4)(5)
Health sciences Other life sciences Physical sciences Engineering and technology									(6)(4)(5)(2)
Health sciences Other life sciences Physical sciences Engineering and technology Mathematics									(6)(4)(5)(2)(9)



igure FQ-24(2). Percent distribution of faculty indicating highest priority student needs, by type of need and educational field (continued)

Student needs	0% 	10% 	20% 	30% 	40% 	50% 	}%	70% 	Percent
er needs ucational field Access to laboratories									
Introductory biology	1								(0)
Health sciences	1 22.7 F								(5)
Other life sciences	<u> </u>								(2)
Physical sciences									(3)
Engineering and technology									(3)
Mathematics	0								(1)
Computer sciences	1		•						(c)
Social sciences	Û								(1)
TOTAL									(3)
ccess to faculty									
Introductory biology	1								(0)
Health sciences									(4)
Other life sciences									3)
Physical sciences									(3)
Engineering and technology	0								(2)
Mathematics	N. K.								(5)
Computer sciences		<u> </u>							(10)
Social sciences									(3)
TOTAL									(3)
								•	



Figure FQ-24(2). Percent distribution of faculty indicating highest priority student needs, by type of need and educational field (continuation)

Student needs	0%	10% 	20% 	30% 	40% 	50% 	60% !	70% 	Percent
er needs ducational field Honors courses									
Introductory biology	1								(0)
Health sciences	1								(0)
Other life sciences									(5)
Physical sciences	\$15 \JESS.								(6)
Engineering and technology									(3)
Machematics									(3)
Computer sciences	1 (2) 1 (2) (2) (3) (4) (4) (5)								(15)
Social sciences									(11)
TOTAL									(5)

Figure FQ-24(3). Percent distribution of faculty indicating first, second, and third priority student needs, by type of college and type of need

Technical institutes

Student needs	0% 2 1	0% 40 	60:	 	80% 	100%	Percent
sic skills							
Language skills	,	(Carlotte)					(31, 30, 20)
Math skil.		, 6478,	Market was			[(28, 23, 34)
Study skills		94480 (* 108 0					(28, 33, 19)
Manipulative skills for laboratory work	· ************************************						(4, 6, 1)
Counseling on need for basic skills	250						(6, 4, 14)
ner needs							
Opportunities for practical experience		1 ₀					(34, 14, 7)
ounseling for careers	100	Market Market St. 1995					(20, 18, 2)
ourses offered more frequently than once a year	840 S2488						(3, 13, 14)
estructuring of courses and/or lab- oratory practices	(25.8)						(6, 7, 10)
Supplementary learning materials	. %2		_				(6, 3, 9)
dvanced courses				Legend:			(3, 8, 3)
ccess to library/learning resources	387.54				1st Priority		(5, 5, 2)
ccess to laboratories				" _{22.} "#"	2nd Priority		(3, 3, 5)
ccess to faculty					3rd Priority		(5, 0, 5)
ouola conlaga			_	-			(2, 1, 0)
						*(1st, 2nd, 3rd	priority)
	1	ı	1		1	1	



Figure FQ-24(3). Percent distribution of faculty indicating first, second, and third priority student needs, by type of college and type of need (continued)

	Privace colleges									
Student needs	0% 	20%	40%	6 0% 	80%	160% Percent				
Basic skills										
Language skills	~~~					[] (42, 33, 16)				
Math skills			1			(12, 28, 50)				
Study skills						(40, 27, 14)				
Manipulative skills						(0, 12, 4)				
Counseling or need for basic skills						(6, 0, 5)				
Other needs										
Opportunities for practical experience	e Table					(21, 4, 12)				
Counseling for careers						(8, 18, 13)				
Courses offered more frequently than once a year						(17, 12, 1)				
Restructuring of courses and/or laboratory practices						(5, 15, 2				
Supplementary learning materials						(4, 6, 13)				
Advarsed courses	1		<u>.</u> 1			(1, 0, 0)				
Access to library/learning resources			1	egend:		(o, 4, 7)				
Access to laboratories		<u> </u>	l	1st Priority		(1, 13, 2)				
Access to faculty						(6, 0, 2)				
Honors mourses			1			(7, ., 0)				
			_		*(1st	, 2nd, 3rd priority)				
					I					



Figure FQ-24(3). Percent distribution of faculty indicating first, sec nd, and t ird priority student new is, by type of college and type of need (continued)

Small comprehensive

	1		i	<u> </u>	Percent Percent
· , , ·					[1] (57, 25, 10)
,					(14, 28, 27)
					(21, 28, 20)
					(1, 6, 2)
		 .			(7, 5, 23)
nce K	*				(21, 5, 5
					(15, 21, 12
					(3, 13, 11
					(6, 9, 5
	1				(11, 5, 4)
					(12, 1, 6)
			Legend:	i i	(3, 5, 0)
			ist	Priority	(0, 1, 6)
			1 2nd	Priority	(2, 0, 1)
			3rd	Priority	(4, 3, 0)
			·	*(1st	, 2nd, 3rd printity)
	nce	ace		Legend: ist	Legend: ist Priority and Priority Jrd Priority



Figure Fg-74(1), stercent distribution of facult indicating first, account, and third size of student needs, by type of college and type of mood (continued).

Medicum	comptehensive
1 Mr. (3 1 / Mai)	1 1200101 1 10 11 17 13

		איז בירויון אוייט פועט פארט מעט פארט איז בערט איז בערט פועט פארט פועט פארט פועט פארט פועט פארט פועט פארט פועט פ								
Student areds	()*	70% 	41%	GUIS CONTRACTOR CONTRA	8116	100% Percent				
Basic skills				Angelein (1964) in the control of th		- The second of the second				
Language skills					ر الأنافية المستقدمة المستقدمة المستقدمة المستقدمة المستقدمة المستقدمة المستقدمة المستقدمة المستقدمة المستقدمة المستقدمة المستقدمة	198, 29, 30, 5				
Math skills						16, 9, 22)				
Study skills						(32, 28, 28)				
Manipulative skills						(4, 2, 7)				
Counseling on need for basic skills	9					(10, 6, 9)				
ther needs Opportunities for practical experie	ence	.es 5) .	- !			(23, 9, 4)				
Counseling for careers			<u>-</u> '			(1., 18, 7)				
Courses of sted more frequently that once a year	an T.					(12, 8, 5)				
Restructuring of courses and/or laboratory practices						(9, 7, 8)				
Supplementary learning materials						(5, 10, 6)				
Advanced courses						(8, 5, 5)				
Access to library learning resource	og	[]		Legend:		(4, 5, 2)				
Access to laboratories		_!		*st	Priority	(2, 6, 4)				
Access to faculty				2nd	Priority	(4, 1, 4)				
Honors courses				3rd	Princity	0, 6, 1)				
					*(1st,	2nd, 3rd prierit				
	1	ļ	, 1	1	i	1				

Figure FQ-24(3). Percent distribution of faculty indicating first, second, and third priorit student needs, by type of college and type of need (continued)

Large comprehensive

Student needs	% !	20% 	40%	6U % 	80%	100% Percent
Basir skills						
Language skil.s				· ·		(41, 26, 15
Math skills	***		Reduction 1			(15, 28, 30
Study skills		, <u>Ş</u>	verite est in a co	· · T		[] (28, 29, 26
Manipulative skills						(2, 4, 5
Counseling on need for basic skills		7820 F				(12, 9, 14
ither needs						
Opportunities for practical experience		No. of the said				(20, 10, 8
Counseling for careers			<u> </u>			(20, 14, 6
Courses offered more frequently then once a year						(5, 4, 11
Restructuring of courses and/or laboratory practices	,0	Way of water				(12, 11, 5
Supplementary learning materials	/00:000 Astro					(3, 10, 8
Advanced courses	550					(8, 4, 1
Access to library/learning resources	# (New 19 %)	_		Legend:		(5, 9, 7
Access to laboratories		<u>_</u> !			st Priority	(6, 3, 7,
Access to faculty	3.20				and Priority	(2, 5, 4)
Honors courses	Maring &				ord Priority	(5, 6, 1)
	•	1	ı	1	*(1st, 2nd, 3	rd priority)



Figure FQ-24(4). Percent distribution of faculty indicating first, second, and third priority student needs, by educational field and type of need (continued)

Other life sciences

Student needs	0% 	20% 	40 % 	6 0 %	80%	100% Percent
Basic skills						
Language skills		, 4 ₅ ,				(34, 27, 16)•
Math skills		E Jakanse (j. 19. akaj daj 19. ak	the second second			(9, 30, 24)
Study skills		, , , ,				(42, 25, 16)
Manipulative skills for laboratory work		<u>-1</u>				(3, 8, 9)
Counseling on need for basic skills	?	26.7				(11, 5, 18)
Other needs						
Opportunities for practical experie	ence Table	. VA Objects	<u>; </u>			(24, 6, 6)
Counseling for careers		ARV New Array Comme	S exec			(14, 26, 8)
Courses offered more frequently that	un Angles	ı				(3, 7, 9)
Restructuring of courses and/or laboratory practices		of other states				(13, 9, 10)
Supplementary learning materials		Maria I				(10, 10, 8)
Advanced courses	· 8-	<u>T</u> I				(6, 4, 1)
Access to library/learning resource	S Property	V ² N		Legend:		(4, 8, 4)
Access to laboratories	al l			1st	Priority	(2, 2, 5)
Access to faculty				<u> </u>	Friority	(3, 1, 0)
Honors courses				3rd	Priorit	(5, 0, 1)
					*(1st,	, 2nd, 3rd priority)
	1	1	I	ı	1	1

Figure FQ-24(4). Percent distribution of faculty indicating first, second, and third priority student needs, by educational field and type of need (continued)

Physical sciences

Student needs	0% 	20% 	40%	60%	80% 	100% Percent
Basic skills						
Language skills			Security	3 • 8 44 € 12 47 4		(40, 29, 17)
Math skills				MANUSCO CONTRACTOR		[] (32, 37, 24)
Study skills		Section 1	Agent deposition of the second			(19, 27, 36)
Manipulative skills for laboratory work	R					(1, 2, 5)
Counseling on need for basic ski	lls					(7, 1, 7)
Other needs						
Opportunities for practical expen	rience	X 6.22.23				(18, 10, 9)
Counseling for careers						(16, 13, 8)
Courses offered more frequently to	than	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				(11, 9, 5)
Restructuring of courses and/or laboratory practices		.6.26				(6, 9, 4)
Supplementary learning materials	20°					(2, 10, 6)
Advanced courses	2					(7, 2, 4)
Access to library/learning resour	rces 💮 💮			Legend:		(5, 3, 1)
Access to laboratories	2			1st	Priority	(3, 2, 3)
Access to faculty				Zeologia 2nd	Priority	(3, 1, 2)
Honors courses	<u> </u>	Way sa		3rd	Priority	(6, 9, 0)
					*(1st,	2nd, 3rd priority)
		1		1		
						1

Figure FQ-24(4). Percent distribution of faculty indicating first, second, and third priority student needs, by educational field and type of need (continued)

Engineering and technology

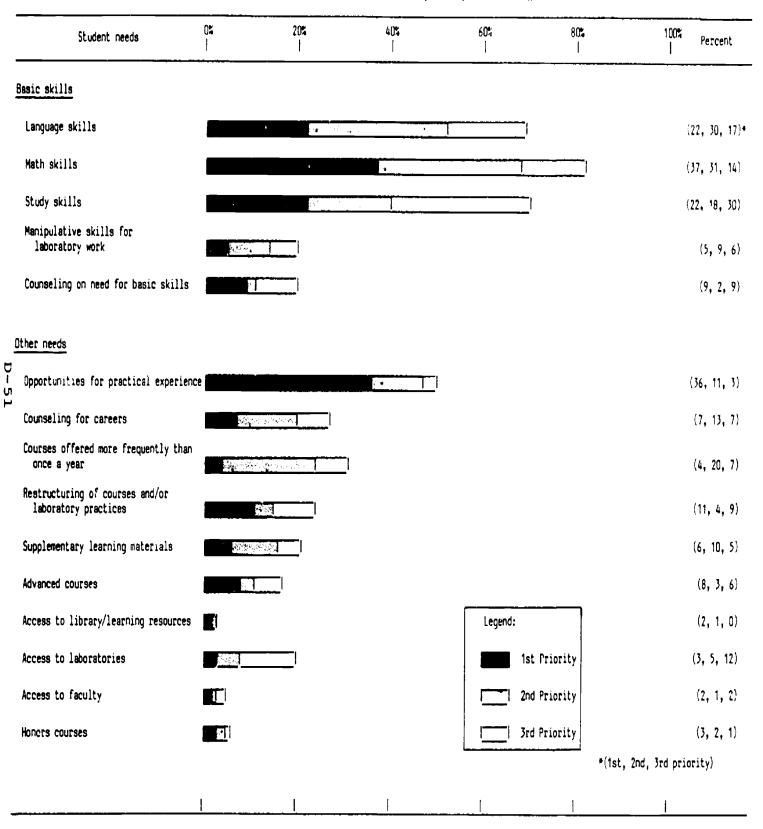




Figure FQ-24(4). Percent distribution of faculty indicating first, second, and third priority student needs, by educational field and type of need (continued)

Mathematics

Student needs	0% 	20%	40% 	60%	8 0% 	100% Percent
esic skills						
Language skills			\$690a.c.	od north, gagiña e	- 1 "	(43, 23, 22
Math skills				Marketon - Alexandra - Alexand		(17, 51, 21
Study skills		8.8	Carlo Mary Mary Control			(27, 18, 40
Manipulative skills for laboratory work	90					(1, 5, 6
Counseling on need for basic skills						(12, 2, 5
ther needs						
Opportunities for practical experience	it i	225	78((22, 11, 7
Counseling for careers						(18, 17, 5
Courses offered more frequently than once a year		227				(15, 5, 5
Restructuring of courses and/or laboratory practices						(11, 9, 7
Supplementary learning matriiels	27:30					(2, 3, 10
Advanced courses	(Comment	1				(5, 4, 6
Access to library/learning resources	201			Legend:		(0, 4, 1
Access to laboratories				1st f	Priority	(1, 1, 4
Access to faculty	A T			2nd F	Priority	(5, 1, 2
Honors courses	A.S.A.			3rd f	Priority	(3, 5, 2)
					*(1s	t, 2nd, 3rd priority)
	1	ı	1	1	1	1

Figure FQ-24(4). Percent distribution of faculty indicating first, second, and third priority attadent needs, by educational field and type of need (continued)

				Computer witences		
Student needs	0% 	201.	40%	6[]4	H()%,	100% Percent
Basic skills				narratura de des diferente algunes dilación de destallación y fuença papa de ma, de tapas	म ५ वर्षम्यान्यस्थितसम्बद्धान्यसम्बद्धान्यस्थानस्थानस्थानस्य स्थापन्यस्य स्थापन्यस्य स्थापन्यस्य स्थापन्यस्य स	dipagnia-ny ta-ugi a dia 46 a i mada amin' apida-apida bi dia gindi apida dia dia
Language skills						(41, 30, 73)*
Math skills						1 (30, 32, 33)
Study skills			•			(29, 31, 27)
Manipulative skills for laboratory work]				(0, 8, 4)
Course the en need for basic skills						(0, 0, 6)
Other needs						
Opportunities for practical experience	ce E					(38, 11, 4)
Counseling for careers	en s	3				(9, 19, 5)
Courses offered more frequently than once a year		1				(8, 4, 14)
Restructuring of courses and/or laboratory practices						(12, 0, 9)
Supplementary learning materials						(5, 20, 9)
Advanced courses	(()	_1				(0, 6, 8)
Access to library/learning resources	College of			Legend:		(0, 9, 0)
Access to laboratories				1st	Priority	(10, 25, 9)
Access to Faculty				1 2nd F	Priority	(15, 4, 23)
Honors courses	1				Priority	
					•(1st,	2nd, 3rd priority)
		1	-	1	1	i

Figure FQ-24(4). Percent distribution of faculty indicating first, second, and third priority student needs, by educational field and type of need (continued)

Social sciences

'Itudent needs	04 	20% 	40%	60% 	80%	100% Percent
Basic skills						
Language skills			1		400,400,500	[(54, 27, 11)
Math skills						(5, 15, 35)
Study skills		,				(29, 43, 17)
Manipulative skills for laboratory work	<u> </u>					(0, 2, 1)
Counseling on need for basic skill	9					(11, 10, 20)
ther needs						
Opportunities for practical experi	ence					(23, 9, 10)
Counseling for careers		<u> </u>	76.74.00.70.X			(21, 19, 6)
Courses offered more frequently the once a year	8n					(3, 5, 6)
Restructuring of courses and/or laboratory practices						(8, 17, 3)
Supplementary learning materials	operation of the second					(4, 8, 5)
Advanced courses	ersetty ethiologia					(7, 5, 2)
Access to library/learning resourc	es Para			Legend:		(6, 6, 10)
Access to laboratories	75.5 T			1st	Priority	(1, 4, 2)
Access to faculty	S	_ i		2nd	Priority	(3, 2, 7)
Honors courses		***		3rd	Priority	(11, 6, 0)
					*(1st	, 2nd, 3rd priority)
	ı	1	•	,	ı	1

Table FQ-25(1). Percent distribution of full-time faculty reporting positive measures to encourage enrollment of women, by type of measure, type of college and educational field

			Women		
Type of college and educational field	Recruit- ment directed toward group	Special courses	Faculty sensitive to group needs	Institu- tional policies and pro- cedures	Auxiliary personnel trained to assist
Type of college					
Technical institutes	59	31	68	64	24
Private colleges	50	11	57	62	6
Small comprehensive	45	24	63	34	21
Medium comprehensive	55	42	62	39	31
Large comprehensive	63	56	69	55	47
Total	60	42	65	50	33
Educational field					
Introductory biology	65	56	51	55	18
Health sciences	61	40	72	42	39
Other life sciences	44	37	60	48	33
Physical sciences	62	36	69	52	33
Engineering and technology	65	40	37	55	38
Mathematics	47	37	55	38	28
Computer sciences	62	14	67	53	28
Social sciences	66	54	68	58	36
Total	58	42	65	50	33

Table FQ-25(2). Percent distribution of full-time faculty reporting positive measures to encourage enrollment of racial/ethnic minorities, by type of measur type of college, and educational field

	Minorities						
Type of college and educational field	Recruit- ment directed toward group	Special courses	Faculty sensitive to group needs	Institu- tional policies and pro- cedures	Auxiliary personnel trained to assist		
Type of college							
Technical institutes	71	39	76	69	53		
Private colleges	70	22	80	75	15		
Small comprehensive	51	28	58	42	21		
Medium comprehensive	57	30	58	44	36		
Large comprehensive	64	54	71	58	52		
Total	62	39	67	55	42		
Educational field							
Introductory biology	65	40	80	56	22		
Health sciences	65	38	68	43	56		
Other life sciences	53	32	60	54	42		
Physical sciences	64	37	75	61	42		
Engineering and technology	67	34	68	58	33		
Mathematics ·	51	35	60	42	33		
Computer sciences	71	28	72	77	46		
Social sciences	69	54	68	64	40		
Total	62	39	67	55 	42		

ERIC Full Tax Provided by ERIC

Table FQ-25(3). Percent distribution of full-time faculty reporting positive measures to encourage enrollment of handicapped students, by type of measure, type of college, and educational field

		•	Handicappe	1	
Type of college and educational field	Recruit- ment directed toward group	Special courses	Faculty sensitive to group needs	Institu- tional policies and pro- cedures	Auxiliary personnel trained to assist
Type of college					
Technical institutes	47	26	53	64	43
Private colleges	33	0	54	39	11
Small comprehensive	32	14	57	34	16
Medium comprehensive	41	23	57	45	30
Large comprehensive	58	38	74	67	59
Toral	46	27	62	54	40
Educational field					
Introductory biology	51	23	65	55	32
Health sciences	41	35	60	52	46
Other life sciences	45	21	58	52	43
Physical sciences	40	21	65	52	39
Engineering and technology	52	32	62	52	38
Mathematics	29	17	62	46	28
Computer sciences	44	28	75	69	52
Social sciences	61	31	66	64	41
Total	46	27	62	54	40

Figure FQ-27. Faculty members' estimates of the degree of their responsibility for planning individual courses: average ratings, by area of responsibility, educational field, and type of college

Designing course outline, goals

None 1	2	Pertial 3	Complete 4 5
			(4.5)
			(4.6)
			(4.6)
			(4.6)
			(4.6)
			(4.4)
			(4.4)
			(4.6)
			(4.6)
None		Partial	Complete
<u> </u>	2	3	4 5
			, (4.5)
			(4.2)
			(4.6)
			(4.6)
			(4.6)
			(4.6)
	1	1 2	None Partial



Figure FQ-27. Faculty members' estimates of the degree of their responsibility for planning individual courses: average ratings, by area of responsibility, educational field, and type of college (continued)

Developing syllabus

Educational field	None 1	2	Partial 3	4	Complete 5
TOTAL					(4.6)
Introductory biology					(4.8)
Health sciences					(4.8)
Other life sciences					(4.7)
Physical sciences					(4.5)
Engineering and technology					(4.5)
Mathematics					(4.5)
Computer sciences					(4.8)
Social sciences					(4.6)
Type of college	None 1	2	Partial 3	4	Complete 5
TOTAL					(4.6)
Technical institutes					(4.5)
Private colleges					(4.7)
Small comprehensive					(4.6)
Medium comprehensive					(4.7)
Large comprehensive					(4.6)



Figure FQ-27. Faculty members' estimates of the degree of their responsibility for planning individual courses: average ratings, by area of responsibility, educational field, and type of college (continued)

Selecting text, or selecting to have no text

Educational field	None	_	Partial	Complete
	1	2	3	4 5
TOTAL				(4.6)
Introductory biology				(4.8)
Health sciences				(4.7)
Other life sciences				(4.7)
Physical sciences				(4.5)
Engineering and technology				(4.4)
Mathematics				(4.3)
Computer sciences				(4.5)
Social sciences				(4.7)
Type of college	None 1	2	Partial 3	Complete 4 5
TOTAL				(4.6)
Technical institutes				(4.5)
Private colleges				(4.7)
Small comprehensive				(4.6)
Medium comprehensive				(4.7)
Large comprehensive				i (4.6)

Figure FQ-27. Faculty members' estimates of the degree of their responsibility for planning individual courses: average ratings, by area of responsibility, educational field, and type of college (continued)

Designing or choosing laboratory exercises

Educational field	None 1	2	Partial 3	Complete 4 5
TOTAL				(4.6)
Introductory biology			4	(4.8)
Health sciences				(4.8)
Other life sciences				(4.8)
Physical sciences				(4.6)
Engineering and technology				(4.5)
Mathem atics				(4.7)
Computer sciences				(4.7)
Social sciences				4 (4.6)
Type of college	None 1	2	Partial 3	Complete 4 5
TOTAL				(4.6)
Technical institutes				(4.6)
Private colleges				(4.9)
Small comprehensive				(4.6
Medium comprehensive				(4.7
Large comprehensive				₫ (4.6)



Figure FQ-27. Faculty members' estimates of the degree of their responsibility for planning individual courses: average ratings, by area of responsibility, educational field, and type of college (continued)

Choosing own teaching methods

iducational field	None		Partial	Complete
	1	2	3	4 5
TOTAL				(4.7)
Introductory biology				(4.8)
Health sciences				(4.7)
Other life sciences				(4.7)
Physical sciences				(4.7)
Engineering and technology				(4.7)
Mathematics				(4.6)
Computer sciences				(4.4)
Social sciences				(4.7)
Type of college	None 1	2	Partial 3	Complete 4 5
TOTAL				(4.7)
Technical institutes				(4.6)
Private colleges				(4.6)
Small comprehensive				(4.8)
Medium comprehensive				(4.7)
Large comprehensive				(4.7)



Figure FQ-27. Faculty members' estimates of the degree of their responsibility for planning individual courses: average ratings, by area of responsibility, educational field, and type of college (continued)

Selecting science equipment for demonstrations and lab

Educational field	None		Partial		Complete
	1	2	3	4	
TOTAL				•	(4.3)
introductory biology					(4.5)
ealth sciences				\mathbf{q}	(4.2)
ther life sciences				7	(4.5)
Physical sciences				,	(4.4)
ingineering and technology				◀	(4.2)
Mathematics			1)	(4.3)
Computer sciences				┥	(4.1)
Social sciences		•		•	(4.2)
	None	_	Partial		Complete
Type of college	1	2	3	4	5
TOTAL				•	(4.3)
Technical institutes				•	(4.4)
Private colleges				4	(4.3)
Small comprehensive				`	(4.6)
Medium comprehensive				1	(4.3
Large comprehensive					(4.2
easys temps with the					



Figure FQ-27. Faculty members' estimates of the degree of their responsibility for planning individual courses: average ratings, by area of responsibility, educational field, and type of college (continued)

Developing budgets

1	2	3		_
		· · · · · · · · · · · · · · · · · · ·	4	<u> </u>
				(2.5)
		月		(2.7)
	<			(2.2)
		7		(2.7)
		$\{1\}$		(2.5)
		}		(2.8)
		/ -		(2.5)
		•		(2.4)
				(2.4)
None		Partial		Complete
1	2	3	4	5
		•		(2.5)
	•			(2.4)
		` }		(2.9)
		4		(2.7)
				(2.6)
	6			(2.3)
_		=		



Figure FQ-29. Faculty members' estimates of the degree of their responsibility for planning curricular programs: average ratings, by area of responsibility, educational field, and type of college

Determining need for program

Educational field	None 1	2	Partial 3	4	Complete 5
TOTAL				-	(3.3)
Introductory biology					(3.0)
Health sciences					(3.0)
Other life sciences					(5.4)
Physical sciences					(3.4)
Engineering and technology					(3.5)
dathemetics					(3.3)
Computer sciences				•	(3.7)
Social sciences					(3.3)

	None Partial			Complete	
Type of college	1	2	3	4	5
	_			_	/7.7
TOTAL					(3.3)
Technical institutes					(3.2)
Private colleges			4	>	(3.6)
				i	/7 h
Small comprehensive					(3.4)
Medium comprehensive					(3.3)
Large comprehensive					(3.3)
Cargo compressional					

Figure FQ-29. Faculty members' estimates of the degree of their responsibility for planning curricular programs: average ratings, by area of responsibility, educational field, and type of college (continued)

Preparing cost estimates

Educational field	None 1	2	Partial 3	4	Complete 5
TOTAL					(2.6)
Introductory biology					(2.5)
Health sciences		<			(2.2)
Other life Sciences			ì		(2.8)
Physical sciences			1		(2.9)
Engineering and technology)		(3.1)
Mathematics			$\langle $		(2.5)
Computer sciences			~		(3.2)
Social sciences					(2.5)
Type of college	None 1	2	Partial 3	4	Complete 5
TOTAL			1		(2.6)
Technical institutes					(2.7)
Private colleges			}		(3.0)
Small comprehensive					(2.7)
Medium comprehensive			<i>i</i>		(2.6)
Large comprehensive					(2.6)



Figure FQ-29. Faculty members' estimates of the degree of their responsibility for planning curricular programs: average ratings, by area of responsibility, educational field, and type of college (continued)

Outlining goals, defining student skills and educational outcomes

Educational field	None 1	2	Partial 3	Complete 4 5
TOTAL			· .	(3.7)
ntroductory biology				(3.2)
			- 1 \	(3.7)
lealth sciences			-	
ther life sciences				(3.9)
Physical sciences				(3.8)
				(3.9)
Ingineering and technology				(3.2)
fathematics			•	(3.7)
hiones				(3.8)
Computer sciences				(3.7)
Social sciences				(3.7)
Type of college	None	_	Partial	Complete 4 5
type of college	1	<u> 2</u>	3	4 5
TOTAL				(3.7)
TOTAL			\	(3.8)
Technical institutes				(3.8)
Private colleges			4	(3.7)
				(3.8)
Small comprehensive				/
Medium comprehensive			-24	(3.7)
Large comprehensive				(3.8)
eerge eempe				



Figure FQ-29. Faculty members' estimates of the degree of their responsibility for planning curricular programs: average ratings, by area of responsibility, educational field, and type of college (continued)

Outlining program structure

Educational field	None		Partial		Complete
	1	2	3	4	5
TOTAL			'		(3.7)
10172					(201)
Introductory biology			1 ((3.4)
Health sciences			1 \		(3.6)
nedicii delenees					().0,
Other life sciences				>	(3.9)
Physical sciences				ŕ	(3.7)
,01011 001000					(5.17)
Engineering and technology				•	(3.9)
Matheriatics					(3.5)
					•
Computer sciences				>	(4.0)
Social sciences					(3.6)
	None		Partial		Complete
Type of college	1	2	3	4	5
					4>
TOTAL					(3.7)
Technical institutes					(3.7)
					(<u>)</u>
Private colleges					(3.7)
Small comprehensive)	(4.0)
				•	(* ()
Medium comprehensive					(3.6)
arge comprehensive					(3.7)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college

1. Course structure

Educational field	Totally inadequate	2	Adequate 3	4	Excellent 5
	1				
TOTAL				مر	(3.9
Introductory biology					(3.2
				`~	(3.8
lealth sciences				N. Committee	
Other life sciences)	(4.0
Physical sciences				4	(3.9
			- 5 1 5	1	(3.8
Ingineering and technology			305	Ī	
fathematics			-4.	•	(3.7
Computer sciences				k	(3.9
Somparer Serences					(4.1
Social sciences				•	
			3	4	5
Type of college		2			
TOTAL				<i>f</i>	(3.9
Technical institutes				♦	(3.7
			354		(3.9
Private colleges				/	
Small comprehensive			3516	4	(3.7
dedium comprehensive				>	(4.1
					(3.9
Large comprehensive			94	•	,,,,,



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

2. Classroom/lecture facilities

Educational field	Totally inadequate	Adequate	Excellent 4 5
	1	2 3	4 5 T
TOTAL		•	(3.4)
Introductory biology			(3.9)
Health sciences			(3.5)
uealtu acteucea			().))
Other life sciences		\$ \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	(3.6)
Physical sciences		1	(3.5)
Engineering and technology			(3.5)
Mathematics		1	(3.6)
Computer sciences		4	(3.5)
Social sciences			(3.9)
Type of college	<u> </u>	2 3	4 5
	İ		
TOTAL			(3.6)
Technical institutes		4	(3.2)
Private colleges			(3.6)
Small comprehensive		,	(3.8)
Medium comprehensive		.]	(3.7)
Large comprehensive			(3.7)
•			



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

3. Class preparation areas

Educational field	Fotally inadequate 1	2	Adequate 3	Excellent 4 5
TOTAL	ļ ļ			(3.4)
Introductory biology			建設之	(3.5)
dealth sciences				(3.0)
Other life sciences				(3.4)
Physical sciences				(3.2)
Engineering and technology				(3.5)
Mathematics				(3.5)
Computer sciences				(3.0)
Social sciences			•	(3.5)
Type of college	1	2	3	4 5
TOTAL				(3.4)
Technical institutes				(3.2)
Private colleges				(3.3)
Small comprehensive			`,	(3.8)
fedium comprehensive				(3.5)
arge comprehensive				(3.2)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

4. <u>Lecture-demonstration facilities</u>

Educational field	Totally inadequate		Adequat e	Excellent
	1	2	3	5
TOTAL				(3.5)
Introductory biology				(3.6)
				į
Health sciences				(3.6)
Other life sciences				(3.5)
Dh. ataul mataunu				(7.4)
Physical sciences				(3.4)
Engineering and technology				(3.3)
Math em atics				(3.3)
Computer sciences				(3.3)
Social sciences				(3.6)
Type of college	1	2	3 4	5
TOTAL				(3.5)
TOTAL				()•))
Technical institutes				(3.1)
Private colleges				(3.3)
Small comprehensive				(3.6)
Medium comprehensive				(3.5)
and company to the				(7.4)
arge comprehensive				(3.6)

Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

5. <u>Laboratory facilities (space)</u>

Educational field	Totally inadequate		Adequate		Excellent
	1	2	3	4	5
				-	
					(3.3
TOTAL	ļ				
Introductory biology			- 45		(3.5
·					(3.0
dealth sciences			#E T \		
Other life sciences					(3.5
					(3.4
Physical sciences					
Engineering and technology	1				(3.3
			331 5		(2.9
Mathematics					
Computer sciences			344		(2.9
					(3.3
Social sciences					
				4	5
Type of college	1	2	3		— Í
TOTAL					(3.3
10172					(2.9
Technical institutes					(2.)
Private colleges					(3.0
]				(3.2
Small comprehensive					
Medium comprehensive					(3.3
					(3.5
Large comprehensive					



Figure FQ-3. Figure seement of 19 institutional characteristics:

accorder ratings, by institutional characteristic, educational field, and type of college (continued)

6. Laboratory apparatus and equipment

Educational field	Totally inadequate	Adequate	Excellent
	1	2 3 4	5
TOTAL			(3.1)
Tabandunkan, biologi		<i>-</i>	(2.9)
Introductory biology	İ		(2.9)
Health sciences			(3.3)
Other life sciences			(3.3)
Physical sciences			(3.0)
Engineering and technology		- 15	(3.2)
Mathematics		J.	(2.8)
rid Cricille C. J.C.S			
Computer sciences		4	(2.9)
Social sciences			(3.2)
Type of college	1	2 3 4	5
			(1.4)
TOTAL		,	(3.1)
Technical institutes		:	(2.9)
Private colleges			(2.8)
-		N	İ
Small comprehensive			(3.0)
ledium comprehensive		14	(3.2)
			(3.3)
arge comprehensive			(5.5)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

7. Budget for laboratory equipment and supplies

Educational field	Totally inadequate		Adequate		Excellent
	1	2	3	4	5
		-			
					(2.7)
TOTAL					
ntroductory biology					(3.0)
Herodactory Diology			A.		(2.9)
lealth sciences					(2.3)
			H		(2.8)
ther life sciences					
Physical sciences			633		(2.6)
,02002					(2.5)
Engineering and technology			100		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
A Ab					(2.6)
Mathematics			$L_{2}L^{2}$		(2.5)
Computer sciences					(2.5)
·					(2.5)
Social sciences	ļ				
Type of collage	11	2	3	4	
					(2.7)
TOTAL					
Technical institutes					(2.6)
160mICal libereaces					(2.6)
Private colleges			Fig.		(2.0
					(2.7
Small comprehensive			THE		
Medium comprehensive					(2.7
			17		(2.7
Large comprehensive					
	i		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

8. Laboratory usage

Educational field	Totally inadequate	Adequate	Excellent
	1 	2 3 4	5
TOTAL			(3.6)
Introductory biology			(3.8)
Health sciences		1	(3.7)
Other life sciences			(3.7)
Physical sciences	İ		(3.6)
Engineering and technology			(3.6)
Mathematics			(3.5)
Computer sciences			(3.8)
Social sciences			(3.0)
Type of college		2 3 4	5
Type of correge			
TOTAL		7	(3.6)
Technical institutes			(3.5)
Private colleges		4	(3.4)
Small comprehensive			(3.5)
Medium comprehensive			(3.6)
			(3.6)
Large comprehensive			(7.6)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

9. Instructional technicians (laboratory sides) - quantity

Educational field	Totally inadequate 1 2	Adequate	Excellent 5
			
TOTAL			(2.5)
introductory biology			(2.8)
Health sciences			(2.6)
Other life sciences			(2.6)
Physical sciences			(2.5)
Engineering and technology			(2.3)
Mathematics			(2.5)
			(2.8)
Computer sciences		7.1	(2.6)
Social sciences			
Type of college	1 2	3 4	5
TOTAL			(2.5)
Technical institutes		1	(2.3)
Private colleges			(2.3)
Small comprehensive			(2.3)
Medium comprehensive			(2.5)
Large comprehensive			(2.7)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

10. <u>Instructional technicians</u> (laboratory sides) - quality

Educational field	Totally inadequate 1 2	Adequat e	Excellent 5
TOTAL		,	(2.9)
Introductory biology			(2.7)
Health sciences			(2.9)
Other life sciences			(2.9)
Physical sciences			(2.7)
Engineering and technology			(2.6)
Mathematics			(3.0)
Computer sciences			(3.2)
Social sciences			(3.1)
Type of college	1 2	3 4	5
TOTAL			(3.0)
echnical institutes			(2.7)
rivate colleges		↓	(2.6)
mall comprehensive			(2.5)
edium comprehensive			(2.9)
arge comprehensive			(3.0)
-			



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

11. Availability of teaching aids

Educational field	Totally inadequate 1	2	Adequate 3	Excellent 5	
TOTAL					(3.5)
ntroductory biology					(3.6)
ealth sciences					(5.6)
ther life sciences					(5.7)
				<i>'</i>	(5.5)
hysical sciences					(3.2)
ngineering and technology					(5.2)
lathematics					
omputer sciences					(2.9)
Social sciences		e .			(3.5)
		:			
Type of college	1	2	Standard State of	5	
		e e			
TOTAL		· ·	7		(3.5)
echnical institutes		-,			(5-4)
Private colleges					(3-2)
		·,			(3.6
Smell comprehensive					(3-5
tedium comprehensive					(3.5
_arge comprehensive					(7•)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

12. Size of classes

Educational field	Totally inadequate 1	Adoquate 2 3	Excellent 4 5
TOTAL		•	(3.5)
Introductory biology			(3.6)
Health sciences			(3.3)
Other life sciences		- 1 to 1	(3.4)
Physical sciences			(3.7)
Engineering and technology			(3.4)
Mathematics			(3.7)
Computer sciences		 ((3.1)
Social sciences			(3.5)
Type of college	1	2 3	4 5
TOTAL		,	(3.5)
Technical institutes			(3.3)
Private colleges			(3.3)
Small comprehensive		1 >	(3.7)
Medium comprehensive			(3.5)
Large comprehensive		•	(3.5)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

13. Prior preparation of students

Educational field	Totally inadequate 1	2	Adequate 3	4	Excellent 5
	<u>_</u>			<u> </u>	
					(2.4)
TOTAL			<i>/</i>		(2.6)
Introductory biology		<			(2.3)
-					(2.9)
Health sciences			7	:	
Other life sciences			/		(2.5)
					(2.3)
Physical sciences					
Engineering and technology			7:4		(2.7)
Mathematics					(2.5)
Tationatics			A di		(2.7)
Computer sciences			7		(2.7)
Social sciences					(2.6)
				,	
Type of college	1	2	3	4	5
					(2.6)
TOTAL					
Technical institutes					(2.6)
			I^{∞}		(2.5)
Private colleges					
Small comprehensive					(2.5)
Medium comprehensive					(2.6)
DEGITOR COMPTENSIBLE					(2.6)
Large comprehensive					(2.6)
	į			3 3	



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

14. Clerical support

Educational field	Totally inad e quate	Adequate	Excellent
	1	2 3 4	5
TOTAL			(3.1)
_			
Introductory biology	!		(3.6)
Health sciences		4	(2.9)
Other life sciences	;	N. C. C. C. C. C. C. C. C. C. C. C. C. C.	(3.0)
other live sciences	İ		().0/
Physical sciences	į		(3.2)
Engineering and technology			(3.0)
Mathematics			(3.3)
Computer sciences			(2.5)
Social sciences			(3.3)
Juctus Sciences			(3.2)
Type of college	<u>_</u>	2 3 4	5
Type of college		2	Ī
TOTAL			(3.1)
Technical institutes		Λ	(2.8)
		M	
Private colleges		1	(3.0)
Small comprehensive		15	(3.3)
		1/	
fedium comprehensive			(3.2)
.arge comprehensive			(3.2)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

15. Library

Educational field	Totally inadequate 1	2	Adequate 3	4	Excellent 5
TOTAL				•	(3.6)
Introductory biology				•	(3.7)
Health sciences				<i>i</i>	(3.6)
168[[[SCIENCES				<u> </u>	(3.6)
Other life sciences				Ĭ	
Physical sciences					(3.3)
Engineering and technology	ł			\	(3.6)
Mathematics			-4.		(3.5)
					(3.2)
Computer sciences				_	(3.7)
Social sciences				•	
Type of college		2	3	4	5
1)00 01 0022040					
TOTAL				•	(3.6)
					(3.4)
Technical institutes					
Private colleges					(3.5)
Small comprehensive				•	(3.6)
Medium comprehensive				•	(3.7)
				1	(3.6)
Large comprehensive			1858	•	
			24		



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

16. Availability of professional journals

Educational field	Totally inadequate	Adequate	Excellent
	1	2 3	4 5
TOTAL			(3.3)
Introductory biology		4	(3.4)
Health sciences			(3.6)
Other life sciences			(3.2)
Physical sciences			(2.9)
		i i i i i i i i i i i i i i i i i i i	
Engineering and technology			(3.3)
Mathematics			(3.3)
Computer sciences		4	(2.9)
Social sciences			(3.3)
Type of college	1	2 3	4 5
TOTAL			(3.3)
Technical institutes		1/	(3.3)
Private colleges		* ((3.0)
Small comprehensive		* 	(3.1)
Medium comprehensive		**	(3.4)
Large comprehensive		1	(3.2)

Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

17. Opportunities for professional growth

Educational field	Totally inadequate		Adequate		Excellent
	1	2	3	4	5
*****					(3.0
TOTAL			- A		
Introductory biology			-63		(3.1
					(3.1
dealth sciences			. <u> </u>		
Other life sciences			4/1		(2.7
					(2.7
Physical sciences			100		(2.7
- /			Ne		(3.0
Engineering and technology					
Mathematics			2.2		(3.0
			3/4		(2.8
Computer sciences			- 34		,,,,,,
Social sciences			2 3		(3.1
Sucial acidicos					
			3	4	5
Type of college		2			
707A					(3.0
TOTAL			524		
Technical institutes	i				(2.8
					(3.1
Private colleges	1				
Small comprehensive			74		(2.7
			Table		(2.9
Medium comprehensive					(2.9
t					(3.1
Large comprehensive					
	1				ĺ



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

18. <u>Teaching environment</u>

Educational field	Totally inadequate 1	Adequate 2 3	Excellent 4 5
	<u> </u>		
TOTAL		٩	(3.7)
Introductory biology	l İ	}	(3.9)
Health sciences			(3.6)
Other life sciences		4	(3.6)
Physical sciences			(3.7)
Engineering and technology			(3.5)
Mathematics			(3.6)
Computer sciences			(3.6)
Social sciences			(3.8)
Type of college	1	2 3	4 5
TOTAL			(3.7)
Technical institutes			(3.4)
Private colleges			(4.0)
Small comprehensive		/	(3.9)
Medium comprehensive			(3.6)
Large comprehensive			(3.7)



Figure FQ-33. Faculty assessment of 19 institutional characteristics: average ratings, by institutional characteristic, educational field, and type of college (continued)

19. Articulation with transfer institutions' policies on transfer of credits

Educational field	Totally inadequate 1	2	Adequate 3	Exc	ellent 5
TOTAL			,		(3.4)
			47		(3.1)
Introductory biology			1		
Health sciences			4		(2.9)
ther life sciences			7		(3.4)
					(3.3)
Physical sciences					
Engineering and technology					(3.3)
Mathematics	1			>	(3.7)
	İ		31 /		(3.3)
Computer sciences					
Social sciences				•	(3.7)
Type of college	11	2	3	4	5 T
TOTAL					(3.4)
TOTAL					(3.0)
Technical institutes					
Private colleges			TO STATE		(3.4)
Small comprehensive				•	(3.5)
					(3.5)
Medium comprehensive					
Large comprehensive					(3.5)
-					
					<u> </u>



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college

Curriculum structure

Educational field	Totally dissatisfied 1	2	Partially satisfied 3 4	Totally satisfied 5
TOTAL			1	(3.9
Introductory biology				(4.2
Health sciences			/	(4.0
ther life sciences			√	(3.8
Physical sciences			\	(3.9
ingineering and technology				(3.9
lathematics				(3.8
Computer sciences			}	(3.9
Social sciences			•	(3.8
Type of college	Totally dissatisfied 1	2	Partially satisfied 3 4	Totally satisfied 5
TOTAL			•	(3.9
echnical institutes			 	(4.0
rivate colleges				(3.7)
mall comprehensive			•	(3.8)
edium comprehensive			\	(3.9)
arge comprehensive				(3.8)



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Curriculum advising

Educational field	Totally dissatisfied 1 2	Partially satisfied 3 4	Totally satisfied 5
TOTAL		4	(3.6)
Introductory biology			(3.8)
Health sciences			(3.7)
Other life sciences		,	(3.7)
Physical sciences			(3.5)
Engineering and technology		4.	(3.6)
Mathematics		11	(3.3)
Computer sciences			(3.5)
Social sciences			(3.5)
Type of college	Totally dissatisfied 1 2	Partially satisfied 3 4	Totally satisfied 5
TOTAL		?	(3.6)
Technical institutes		1	(3.6)
Private colleges		4	(3.5)
Small comprehensive			(3.7)
Medium comprehensive		,	(3.7)
Large comprehensive			(3.5)



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Classrooms

Educational field	Totally dissatisfied 1 2	Partially satisfied	Totally satisfied
TOTAL			(4.1)
Introductory biology			(4.6)
Health sciences			(4.0)
Other life sciences			(4.4)
Physical sciences			(4.3)
Engineering and technology			(3.9)
Mathematics			(4.
Computer sciences			(4.2)
Social sciences			(4.1)
Type of college	Totally dissatisfied 1 2	Partially satisfied	Totally satisfied 4 5
TOTAL			, (4.1)
Technical institutes			(3.8)
Private colleges			(3.9)
Small comprehensive			(3.8)
Medium comprehensive			(4.3)
Large comprehensive			(4.1)



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Lecture halls

Educational field	Totally dissatisfied 1	2	Partially satisfied	Totally satisfied 4 5
TOTAL				(4.1)
Introductory biology				(4.5)
Health sciences				(3.7)
Other life sciences				(4.4)
Physical sciences				(4.2)
Engineering and technology				(3.9)
Mathematics				(4.1)
Computer sciences				(3.8)
Social sciences				(4.0)
Type of college	Totally dissatisfied 1	2	Partially satisfied 3	Totally satisfied 4 5
TOTAL			ļ	(4.1)
Technical institutes				(3.8)
Private colleges				(3.7)
Small comprehensive				(3.7)
Medium comprehensive				(4.3)
Large comprehensive				(4.1)



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Laboratory space

Educational field	Totally dissatisfied 1 2	Partially satisfied	Totally satisfied
	1 2	3 4	5
TOTAL			(3,9)
Introductory biology			(4.4)
Health sciences			(3.7)
Other life sciences			y (4.1)
Physical sciences			(4.0)
Engineering and technology			(3.8)
Mathematics			(3.9)
Computer sciences			(3.3)
Social sciences			(3.8)
SUCCES. SEASINGES			(7.0)
	Totally	Fartielly	Totally
Type of college	dissetisfied 1 2	satisfied 3 4	satisfied 5
TOTAL			(3.9)
Technical institutes			(3.7)
Private colleges		\mathbf{A}	(3.3)
Small comprehensive			(3.6)
Medium comprehensive			(4.0)
Large comprehensive			(4.0)



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Laboratory equipment

Educational field	Totally dissatisfied 1 2	Partially satisfied 3 4	Totally satisfied 5
TOTAL		,	(3.8)
Introductory biology			(3.5)
Health aciences			(3.9)
Other life sciences			(4.1)
Physical sciences			(3.6)
Engineering and technology		1/	(3.5)
Hathematics		14	(3.2)
Computer sciences			(3.7)
Social sciences			(3.8)
Type of college	Totally dissatisfied 1 2	Partially satisfied	Totally satisfied 5
TOTAL		1, 1,	(3.8
Technical institutes			(3.6
Private collag es			(3.4
Small comprehensive			(3.6)
Medium comprehensive		(4)	(3.9
Large comprehensive			(3.8



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Scheduling of science courses

Educational field	Totally dissatisfied	Partially satisfied	Totally satisfied
	1 2	3	4 5
TOTAL			(3.8)
Introductory biology			(4.3)
Health sciences			(3.9)
Other life sciences			(4.0)
Physical sciences			(3.9)
Engineering and technology			(3.8)
Mathematics		-	(3.6)
Computer sciences			(3.7)
Social sciences			(3.7)
Type of college	Totally dissetisfied 1 2	Partially satisfied	Totally satisfied 4 5
TOTAL			• (3.8)
Technical institutes			(3.8)
Private colleges			(3.7)
Small compremensive			(4.1)
dedium comprehensive			(3.9)
.arge comprehensive			(3.8)



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Size of science classes

Educational field	Totally dissatisfied 1	2	Partially satisfied 3	Totally satisfied
TOTAL				(4.2)
Introductory biology				(4.5)
dealth sciences				(4.2)
ther life sciences				(4.2)
Physical sciences				(4.4)
Ingineering and technology				(4.2)
1athemetics				(4.2)
Computer sciences				(4.3)
Social sciences				(4.1
Type of college	Totally dissatisfied	2	Partially satisfied	Totally satisfied 4 5
				• (4.2
TOTAL			4	
Technical institutes				(4.2
Private colleges				(3.6
Small comprehensive				(4.4)
Medium comprehensive				(4.4
Large comprehensive				d (4.2



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Library

Educational field	Totally dissatisfied 1	2	Partially satisfied 3	Totally satisfied 4 5
TOTAL				(3.9)
Introductory biology				(3.9)
Health sciences				(4.0)
Other life sciences			•	(3.9)
Physical sciences				(3.8)
Engineering and technology				(4.0)
Mathematics			/	(3.8)
Computer sciences			1 ((3.5)
Social sciences			1	(3.9)
Type of college	Totally dissatisfied 1	2	Partially satisfied 3 4	Totally satisfied 5
TOTAL			•	- (3,9)
Technical institutes				(3,8)
Private colleges				(3.5)
Small comprehensive				(4.0)
Medium comprehensive				(4.0)
Large comprehensive				(4.0)



Figure SQ-27. Science majors' assessment of characteristics of their science programs: average ratings, by characteristic, educational field, and type of college (continued)

Audiovisual materials

Educational field	Totally dissatisfied 1	2	Partially satisfied 3 4	Totally satisfied 5
TOTAL				(3.8)
Introductory biology			1	(3.7)
Health sciences				(4.0)
Other life sciences			,	(4.0)
Physical sciences			1	(3.8)
Ingineering and technology				(3.7
Mathematics		•		(3.6
Computer sciences			1 ((3.3
Social sciences			•	(3.8
Type of college	Totally dissatisfied 1	2	Partially satisfied 3 4	Totally satisfied 5
TOTAL			1	(3.8
[echnical institutes				(3.5
Private colleges			4	(3.4
Small comprehensive				(3.8
Medium comprehensive				(4.0
Large comprehensive				(3.9



Figure SQ-(A). Percent distribution of students taking science courses and students majoring in science, by racial/ethnic group and sex

Recial/ethnic group		20%	40%	60%	80%	100%	Percen female
American Indian/Alaskan Nativ	<u>re</u>		 				
Taking science courses	Service and the Service	Maniphotology and the second	• Show of				(37)
Science majors		****					(16)
Asian/Pacific Islander							
Taking science courses	San Septem (Albert)	Market Company of the Control	5 CA #				(34)
Science majors	S. N. State Company	Paramatay (Abanda Abanda Abanda Abanda Abanda Abanda Abanda Abanda Abanda Abanda Abanda Abanda Abanda Abanda A					(30)
Hack (Non-Hispanic)							
Taking science courses		en en en en en en en en en en en en en e	Northead Control of the Control of t	stografia Marchaellas de			(65)
Science majors		Waterwater over some personal	nga nga lawar bilayaya	8 - 19			(63)
hite (Non-Hispanic)							
Taking science courses		t out out he say, many make the dealers	majara na na na angara				(53)
Science majors	Market 1	Maria di di di Amerika di Sana	and the same of th	6.3			(54)
ispanic							
Taking science courses	a i a marana da a marana da a marana da a marana da a marana da a marana da a marana da a marana da a marana d A marana da a marana da a marana da a marana da a marana da a marana da a marana da a marana da a marana da a m	a difference de la companya de la companya de la companya de la companya de la companya de la companya de la c	Carana Company Confed				(50)
cience majors	Author States and States	Artin ett og påre statetets	Janas Kasa				(44)
TOTAL							
aking science courses	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u> </u>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	X			(53)
cience majors							(55)
						<u> </u>	
						Female	
						Male	

APPENDIX E
Survey Questionnaires



LIST OF QUESTIONNAIRES

Questionnaire																			Page
Institutional	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		E- 5
Faculty	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	E-17
Student												_		_				_	E-29



National Science Education Survey

April 1979

If this campus is a part of a university, state, or multi-campus system, enter the name of the system below.



QUESTION 1 CALLS FOR AN OVERALL ASSESSMENT

OF THE COLLEGE'S NEEDS IN SCIENCE EDUCATION. SUBSEQUENT

QUESTIONS IN THIS SECTION (Q.2-Q.5) REQUEST MORE

DETAILED INFORMATION.

1. Attachment 1 contains a list of codes and corresponding educational fields or disciplines in science and technology. Indicate which of these fields (for programs that are currently operating) critically need improvement. (FOR EACH FIELD THAT NEEDS IMPROVEMENT CIRCLE NUMBERS FOR ALL TYPES OF IMPROVEMENT NEEDED. THEN RANK ORDER THE THREE EDUCATIONAL FIELDS THAT HAVE TOP PRIORITY BEGINNING WITH 1 AS THE HIGHEST.)

Educational	<u> </u>	,	Type(s) of i	mprovement	needed	
field (Code)	Priority	Facilities	Equipment	Restruct- turing of course content	Instruc- tional metho- dologies	Faculty develop- ment
	()	1	2	3	4	5
	()	1	2	3	4	5
	()	1	2	3	4	5
	()	1	2	3	4	5
	()	1	2	3	4	5
	()	1	2	3	4	5
	()	1	2	3	4	5
	()	1	2	3	4	5
	()	1	2	3	4	5
	()	1	2	3	4	5



E-7 158

2. Facilities Improvements

For those educational fields listed in Question 1 that need equipment and/or facilities improvement, indicate below the kinds of improvements needed.

(CIRCLE ALL THAT APPLY):

	Lecture-de	emonstration			Laborato	ries		
Edu ca -	Conoting	Specialized	General p	urpose	Self- instructional media-assisted			
tional field	Construction or renotvation	hardware for science/ technology	Construc- tion or reno- vation	Major equip- ment	Construction or renovation	Major equip- ment	Construc- tion or reno- vation	Major equip- ment
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8

(CIRCLE HERE IF NO FACILITIES IMPROVEMENT IS NEEDED). 1



15*3*

3.	What percent of th	ne facilities	available	for	science	and	technology	are
	in need of improve	ement?						

		(CIRCLE	ONE)
	Less than 25 percent	$\frac{2}{3}$	
•	If this college campus needs major construction or hardware (e.g., compinstallation) not already included in Questions 1 through 3, please lisbelow. (IF NONE ENTER "NONE" BELOW):		

 How adequate are the instructional media available to this campus in facilitation science instruction? (CIRCLE THE APPROPRIATE NUMBER FOR EACH ITEM)

	j	otally dequate				Completely adequate
Book collection		1	•	3	4	5
Discipline-oriented journals .		 1		3	4	5
General interest periodicals .		1		3	4	5
Reference volumes		1	2	3	4	5
Audio-visual media:						
Facilities		1	2	3	4	5
Software		1	2	3	4	5
Hagdware		1	2	3	4	5
Efficiency of puring media materia. As a squested		1	2	3	4	5

QUESTIONS 6 THROUGH 11 ARE CONCERNED WITH THE PROFESSIONAL NEEDS OF SCIENCE FACULTY IN ORDER TO KEEP CURRENT IN THEIR FIELDS.

FACULTY DEVELOPMENT

6. What percent of the science faculty have a critical need for improvement in each of the following aspects of teaching? (CIRCLE ONE NUMBER FOR EACH ASPECT.)

		Percent							
Aspects of teaching	Less than 20		40 to	60 to 79	More than 80				
Knowledge of content in teaching field	1	2	3	4	5				
Teaching methods (including instructional media)	1	2	3	. 4	. 5				
Practical work experience related to field of teaching	1	2	3	. 4	. s				
Attitudes toward teaching	1	2	3	4	. 5				
Other (SPECIFY)	1	. 2	3	4	5				



7. Which of the following options would be most effective in meeting the need for faculty improvement in acience instruction for each of the teaching aspects shown below? (CIRCLE THE APPROPRIATE NUMBER(s) FOR EACH COLUMN)

		Aepects 0	f teaching	
Faculty improvement options	Knowledge of content	Teaching methods	Practical work experience	Attitudes toward teaching
In-service program, part-time during school year	01	01	01	01
Full-time academic year	02	02	02	02
Short-duration academic year program (e.g., weekends, holidays).	03	63	03	03
Full-time summer program	04	, 04	04	04
Short-duration summer program	05	05	05	05
Self-study materials	06	06	06	06
Attendance at professional meetings	07	07	07	07
Accessibility of professional literature	08	08	08	08
Other (SPECIFY)	09	09	09	09

	During the last five years, what advantage of opportunities for Be Question 7?	elf improveme	ent s	uch as	tho	se l	list	ed			RCLE
				2.0						•	
				n 20							
		40 -	- 59								. 3
		60	- 80				• •	٠	•	•	. 4
		Ove:	. 80		• •		• •	•	•	•	
	What percent of the faculty member	ers (i.e., h	ead c	ount)	teac	hing	g in	30	ier	161	(1C
	fields at this college campus are FOR LISTING OF FIELDS TO BE INCLU	part-time?	(PL	ease R	EFER	TO	ATT	ACH	MEN	T.	1
									1	(CI	RCLE
		Les	tha	n 20							. ;
		20	- 39		• •	•	• •	•			. 3
		60	- 80				: :	÷	: :		. 4
		Cve:	80								. 5
		NON	e (SK	IP TO	0.13) .	- •	•	•	•	. 0
0.	What percent of the course section time instructors?			in 10					,	(CI	RCLE
		10	- 19			: :	: :		: :		, 2
											. 3
		20 -									
		20 · 30 ·	- 39			• •					. 4
		20 - 30 - 40 -	- 39 - 50	percen	: :			:		•	. 5
•	uni dosa chia collega define a Di	20 - 30 - 40 - Ove:	- 39 - 50 r 50	 percen				:		•	. 5
١.	How does this college define a pa	20 - 30 - 40 - Ove:	- 39 - 50 r 50	 percen				:		•	. 5
	How does this college define a pe	20 - 30 - 40 - Ove:	- 39 - 50 r 50	 percen				:		•	. 5
. .	How does this college define a Po	20 - 30 - 40 - Ove:	- 39 - 50 r 50	 percen				:		•	. 5
. .	How does this college define a po	20 - 30 - 40 - Ove:	- 39 - 50 r 50	 percen				:		•	. 5
2.	The state of the s	20 30 40 40 Over	- 39 - 50 r 50 ulty	percen	?	-		:			. 5
	Please check the single most important teaching in the science fields at	ortant reaso	- 39 - 50 r 50 ulty	percen				:	cult		. 5
	The state of the s	20 30 40 40 Over art-time factor reason this collections insuffice	- 39 - 50 r 50 ulty	percen member using	par	t-t:	ime	fac	ruli	ty	for



Other (SPECIFY)

QUESTIONS 13 THROUGH 15 REFER TO STUDENTS NEEDS IN SCIENCE EDUCATION ON THIS CAMPUS

	DEVELOPMENT OF BASIC SKILLS		(CIRCLE AL	
			THAT APPL	Y) ORDER
	Language skills			-
	Study skills			
	Basic manipulative skills for labo			
	Counseling on their need for basic	skills	5	
	OTHER NEEDS			
	Honors courses			
	Counseling for careers			
	Courses offered more frequently the	an once a year .	10	
	Restructuring of courses and/or la			
	for use of non-traditional instri Supplementary learning materials			
	Increased access to college resource			
	Library/learning resources		13	
	Laboratories			
	Faculty	• • • • • • • •	15	and the comment
١.	What methods does this college use following student groups in science	e and technology?	(CIRCLE ALL	THAT APPLY)
		Women	Minorities	
	Recruitment directed toward the gre	oups 1	1	1
	Special courses	2	2	2
	Faculty sensitive to the needs of t	the group 3	3	3
	Institutional policies and procedu:		4	4
	Auxiliary personnel trained to assi		5	5
	Other (PLEASE SPECIFY)	6	δ	6
	Nothing special	7	7	7
ī,	Has the college provided for physic and technology classes?	Completely Partially Not at all		(CIRCLE
c.	QUESTIONS 16 THROUGH 19 RI	Completely Partially Not at all	NG PROCESS	(CIRCLE
	and technology classes? QUESTIONS 16 THROUGH 19 RE	Completely Partially	ING PROCESS AMFUS.	(CIRCLE
	QUESTIONS 16 THROUGH 19 REFOR NEW COURSES AND P	Completely Partially	NG PROCESS AMFUS. a new course g Board of Tr	(CIRCLE123
	QUESTIONS 16 THROUGH 19 REFOR NEW COURSES AND P	Completely Partially	NG PROCESS AMFUS. a new course g Board of Tr	(CIRCLE
	QUESTIONS 16 THROUGH 19 REFOR NEW COURSES AND P	Completely Partially	a new course g Board of Tr	(CIRCLE
-	QUESTIONS 16 THROUGH 19 REFOR NEW COURSES AND PHOW many months does it usually take to gain approval through the college. Once approval for a new course or p	Completely Partially	a new course g Board of Tr	(CIRCLE
	QUESTIONS 16 THROUGH 19 REFOR NEW COURSES AND PHOW many months does it usually take to gain approval through the college. Once approval for a new course or p	Completely Partially	NG PROCESS AMPUS. a new course g Board of Tr program program at the college pe obtained?	(CIRCLE
-	QUESTIONS 16 THROUGH 19 REFOR NEW COURSES AND PHOW many months does it usually take to gain approval through the college. Once approval for a new course or p	Completely Partially	NG PROCESS AMFUS. a new course g Board of Tr program at the college be obtained?	(CIRCLE
-	QUESTIONS 16 THROUGH 19 REFOR NEW COURSES AND PHOW many months does it usually take to gain approval through the college Once approval for a new course or personal many months does it take for any ot After gaining necessary approvals.	Completely Partially	NG PROCESS AMFUS. a new course g Board of Tr program at the college be obtained?	(CIRCLE



		rans are	
	Definite	anticipated	
>rogram	plans exist	or under development	No plans anticipated
···	1	:	3
1		2	3
2		2	3
3		2	3
٠	i	4	•
QUESTIONS 20 THORUGH PROBLEMS OF ARTICULATION WIT Does this college campus have or universities for the trans	e <u>formal</u> arrangements sfer of credits?	DIVISION INSTI	colleges and/ (CIRCLE
PROBLEMS OF ARTICULATION WIT Does this college campus have or universities for the trans	e formal arrangements sfer of credits? Yes No	with four-year	colleges and/ (CIRCLE12
PROBLEMS OF ARTICULATION WIT Does this college campus have or universities for the trans	e formal arrangements sfer of credits? Yes No	with four-year with four-year for students (BEGIN WITH 1	colleges and/ (CIRCLE12 transferring AS MOST:
PROBLEMS OF ARTICULATION WITH Does this college campus have or universities for the transfer of the transfer o	e formal arrangements sfer of credits? Yes No articulation problem om this college campu A PROBLEM, ENTER ZER	with four-year with four-year for students (BEGIN WITH 1 O FOR THE ITEM)	colleges and/ (CIRCLE12 transferring AS MOST:
PROBLEMS OF ARTICULATION WITDOOR THIS COLLEGE CAMPUS have or universities for the transfer the following potential to four year institutions from the programmer of the progra	e formal arrangements sfer of credits? Yes No articulation problem om this college campu A PROBLEM, ENTER ZER	with four-year with four-year for students (BEGIN WITH 1 O FOR THE ITEM)	colleges and/ (CIRCLE12 transferring AS MOST:
PROBLEMS OF ARTICULATION WITH THE PROBLEMS OF ARTICULATION WITH THE PROBLEMS OF THE TRANSPORT OF THE TRANSPORT OF THE TRANSPORT OF THE PROBLEMS OF THE PROBLEM	e formal arrangements sfer of credits? Yes No articulation problem om this college campu A PROBLEM, ENTER ZER oes not accept our co	with four-year with four-year for students (BEGIN WITH 1 O FOR THE ITEM) wrses t will not	colleges and/ (CIRCLE
PROBLEMS OF ARTICULATION WITH DOES this college campus have or universities for the transfer of the transfer o	e formal arrangements sfer of credits? Yes No articulation problem om this college campu A PROBLEM, ENTER ZER oes not accept our co crepts our courses bu r requirements onsiders our courses	with four-year with four-year for students (BEGIN WITH 1 O FOR THE ITEM) wrses t will not upper division	colleges and/ (CIRCLE
PROBLEMS OF ARTICULATION WITH Does this college campus have or universities for the transfer of the transfer o	e formal arrangements sfer of credits? Yes No articulation problem om this college campu A PROBLEM, ENTER ZER oes not accept our co crepts our courses bu r requirements onsiders our courses	with four-year with four-year s for students (BEGIN WITH 1 O FOR THE ITEM) urses t will not	colleges and/ (CIRCLE

QUESTIONS 23 AND 24 REQUEST INFORMATION ABOUT THIS COLLEGE CAMPUS

If yes, please specify reasons:

24. What was the total enrollment [full-time plus part-time] for this campus for the Fall session of 1978? (CIRCLE ONE)



25. What sources were used to supply information or this questionnaire?

		(C1	LRC	طط	F	LLL	• :	1,114	/ T.	APPLY)
Records of departmental requests		•		•				•		1
College office of institutional research					-					2
College budget requests	-		•					-	-	3
Planning documents		•								4
College self-study report	-	•						-		5
Accreditation team report				-						6
Generally accepted professional standards	-			•						7
State-recommended standards										8
Access to other records not mentioned above	-		•	-					-	9
Internal suggestion now being evaluated				•		•		-	. 1	.0
External suggestion now being evaluated	-		•	•	•	-	-		_ 1	.1
Consultation with department chairperson	-					-			- 1	.2
Consultation with department faculty				-	•				. 1	.3
Consultation with knowledgeable administrative staff									.1	.4
Professional judgement of person responsible for this	CD:	es	tio	oni	na	ir	۾	_	. 1	.5



E-13 164

ATTACHMENT 1

EDUCATIONAL FIELDS

Please use this classification to respond to Questions 1 and 2 of this question-naire.

Where the general fields have been divided into finer categories, please use the categories as much as possible. When no applicable category is given, use the broader classification.

ODE	FIELD	CODE	FIELD
10	Agriculture and National Resources	100	Mechanical, Engineering, and Natural Science Technologies
20	Biological Sciences	101	Aeronautical and Aviation Technologies
21	Botany	102	Agricultural Technologies
22	Ecology	103	Architectural Drafting
23	Microbiology		Technologies
24	Physiology and Human	104	Chemical Technologies
	Anatomy	105	Civil Technologies
25	Zoology	106	Electromechanical Tech- nologies
130	Computer and Information	107	Electronic Technologies
	Sciences	108	Forestry and Wildlife Technologies
40	Engineering	109	Home Economics Technolo- gies
50	General Science and Interdisci-	110	Industrial Technologies
	plinary Sciences	111	Instrumentation Technolo- gies
60	Mathematics	112	Laboratory Technologies (General)
70	Nursing	113	Marine and Oceanographic Technologies
80	Physical Sciences	114	Mechanical Technologies
•	•	115	Nuclear Technologies
81 82	Astronomy Chemistry	116	Textile Technologies
83 84	Earth Sciences Physics	120	Health Related Occupations
90	Social Sciences	121	Clinical Laboratory Services
91	Anthropology	122	Dental Services
92	Economics	123	Dietetic and Nutritional
93	Geography		Services
93 94	Political Science (Government)	124	Medical Instrumentation ar Machine Operation
95		125	Mental Health
	Psychology	126	Nursing Related Services
96	Sociology	127	Radiological Services
		128	Other Health Related Occupations



National Science Education Survey

April 1979

Your Academic Rank



QUESTIONS 1 THROUGH 3 REFER THE COURSE SECTION
IDENTIFIED ON THE FRONT TAIS QUESTIONNAIRE

1.	How many students were officially registered for first day of classes?	this class section for the
		NUMBER
2.	How many students are currently registered in this	s class section?
		NUMBER
3.	Indicate all the items which describe this course	(CIRCLE ALL THAT APPLY)
	Parallel or equivalent to a lower division collevel course at transfer institutions	• • • • • • • • • • • • • • • • • • • •
	For transfer students majoring in one of the neresources fields (e.g., agriculture, forestry) allied health field (e.g., nursing, dental hyg	lene) 2
	For transfer students majoring in one of the poor biological sciences, engineering, mathematithe health sciences (e.g., pre-medicine, pre-d	entistry) 3
	For transfer students majoring in a non-scienc area (e.g., arts, humanities, history)	
	For transfer students majoring in social scien	
	For occupational students in a science technol engineering technology area	
	For occupational students in an allied health	area 7
	For continuing education or personal upgrading adult students	of
	A high school make-up or remedial course	9
	A general education course for non-transfer an non-occupational students	ď
	Other (specify)	
	other (specify	11
	QUESTIONS 4 THROUGH 12 REQUEST BACKGROUND IN	FORMATION ABOUT YOU
4.	What is your sex?	(CIRCLE OF,
	•	<u>_</u>
		Male 1 Female 2
5.	How old were you on your last birthday?	
		(CIRCLE ONE)
		Less than 25 1
		26 - 29 · · · · · · · · · · · · 2 30 - 39 · · · · · · · · 3
		40 - 49 4 50 - 59 5
		60 and over 6



_	Please indicate your earned degrees, the year	the degree was a	nwarded.
6.	and the major field of the degree. (REFER TO CLASSIFICATION OF FIELDS AND ENTER CODES BELO	ATTACHMENT IF FO	OR .
		Major field (CODE FROM ATTACHMENT 1F)	Calendar year degree awarded
	DEGREE Doctorate (including PhD, EdD and MD)		19
			19
	Master's degree		19
	Bachelor's degree	•	
	Associate degree	·	19
	No earned degree	•	19
	Other earned degrees (SPECIFY)		
			19
7.	What additional formal study have you undertanot awarded? (REFER TO ATTACHMENT IF AND ENTIF NONE, ENTER ZEROS BELOW.)	ken for which a GER APPROPRIATE FI	ELD CODE.
		· ·	
	QUESTIONS 8 AND 9 REQUEST INFORMATION		
	EXPERIENCE. FOR FULL-TIME AND PART-T DEFINITIONS IN EFFECT AT THE INSTITUTION		
	DEFINITIONS IN EFFECT AT THE INSTITUTION		
8.	Indicate below the total number of years you	have been teaching	ng.
٥.	THAT THE POTON CHA DATA HERE TO JULIE 1		
			Total Years
9.	Of the total years you have been teaching, in years you were primarily teaching full-time a were primarily teaching part-time at the follower.	ind the number of	number of years you
	were primarily todawing part time to the	Primarily full-time	Primarily part-time
	Two-year college	•	
	Four-year college or university	•	
	Fre-college	•	
	*Years teaching full-time plus years teaching the total number of years indicated in Q.8.	y part-time should	i equal
10.	How many years of non-teaching employment exp field in which you are currently teaching? (YEAR. IF NONE, ENTER ZEROS BELOW)	perience have you ROUND TO THE NEAR	had in the REST FULL
			Vears
			Years
11	What is your present teaching status at this	college campus?	
11.	What is your <u>present</u> teaching status at this	Full-time .	(CIRCLE ONE
11.	What is your present teaching status at this	Full-time .	(CIRCLE ONE
	In addition to your teaching responsibilities	Full-time Part-time .	(CIRCLE ONE
		Full-time Part-time , what other Position Chairperson /assistant dean inistrator	(CIRCLE ONE



QUESTIONS 13 THROUGH 15 ARE CONCERNED WITH YOUR TEACHING AND RELATED RESPONSIBILITIES AT THIS COLLEGE, AS WELL AS OTHER PROFESSIONAL RESPONSIBILITIES.

13. Please enter below the requested information on each course you are now teaching at this college as part of your regular load (as defined by your college). Each section of each course should be entered separately. Laboratory sections should be listed separately from lecture and discussion sections if held at different times. (RECORD OVERLOAD IN QUESTION 14.)

	Number of szu-	Aver	age numb	er of ho r week	ours	Number of	desi fo tran cred a 4-	ourse gned or sfer it to year	subst port: this for wh	there antial ons of course ich you ou could
Course catalogue number	dents cur- rently regis- tered	Class- room teach- ing	Labora- tory teach- ing	Other*	Total	credits for this	college? (CIRCLE ONE NUMBER)		adequately prepared? (CIRCLE ONE NUMBER)	
				İ			Yes	No	Yes	No
						j	1	2	1	2
					i		1	2	1	2
_							1	2	1	2
							1	2	1	2
							1	2	1	2
							1	2	1	2
		†					1	2	1	2
							1	2	1	2

^{*}Include stude: contact time, preparing class and laboratory material, correcting papers, grading students, and advising students.

14. Por courses and course sections you are carrying at this college as an overload (as defined by your college) please show the same information as in Question 13

(IF NO OVERLOAD, CIRCLE HERE) 1

	Number of stu-	Aver	age numbe spent pe		urs	Number of	desi fo tran	or sfer	subst porti this for wh	there antial ons of course ish you ou could more
Course catalogue number	dents cur- rently regis- tered	Class- room teach- ing	Labora- tory teach- ing	credits for		credits for this	credit to a 4-year college? (CIRCLE ONE NUMBER)		adeq prep (CIRC	mately ared? LE ONE BER)
						[]	Yes	No	Yes	No
					1		1	2	1	2
				-			1	2	1	2
_							1	2	1	2
							1	2	1	2
							1	2	1	2
		<u> </u>					1	2	1	2
							1	2	1	2
					İ		1	2	i	2

^{*}Include student contact time, preparing class and laboratory material, correcting papers, grading students, and advising students.



QUESTION 15 ASKS ABOUT ACTIVITIES THAT ARE A FUNCTION
OF YOUR POSITION AT THIS COLLEGE.
QUESTION 16 ASKS ABOUT ACTIVITIES THAT ARE NOT A FUNCTION OF YOUR POSITION AT THIS COLLEGE.

15. Please indicate the number of hours you usually spend each week on the following activities (MAKE AN ENTRY ON EACH LINE; ENTER ZERO IF NONE FOR THAT ACTIVITY):

Professional activities that are a function of your position at the college:	Number of hours
Classroom teaching, laboratory or shop (including preparation time), and other related classroom duties (including student contact time, preparing class material, correcting papers, and grading students)	
Administrative duties (including departmental administrative work, record keeping, preparing reports, faculty meetings. Committee work)	
Performance and administration of research or development projects (including instructional projects)	
Professional reading (e.g., journals, new texts)	
Other college activities (e.g., advising students, advising <pre>tudent</pre> clubs)	_
(SPECIFY)	

16. Please indicate the number of hours you usually spend each week on the following activities that are not a function of your position at this college. (MA**, AN ENTRY ON EACH LINE; ENTER ZERO IF NONE FOR THAT ACTIVITY):

rofessional activities that are <u>not</u> a function of your position at his college:	Numb of hou
Adjunct teaching at this college, including other campuses	
Teaching at another educational institution:	1
Two-year college	
Four-year college	
High school	i
Other	
Working toward an advanced degree	t i
Research at another educational institution other than for an advanced degree	
Paid employment or consultation in a professional capacity in inlustry, government, or nonprofit organizations	
Self-employment, professional activities (e.g., consulting, editing or writing)	
Activities connected with professional associations	
Other professional activities (SPECIFY)	
SUM OF ACTIVITIES	1

OUESTIONS 17 THROUGH 23 ASK ABOUT YOUR PROFESSIONAL DEVELOPMENT PROGRAM PARTICIPATION SINCE YOU FIRST STARTED TEACHING, AND YOUR NEEDS FOR FURTHER PROFESSIONAL DEVELOPMENT.

17.	Have you been a participant in one or more <u>National Science Foundation</u> institutes or other programs sponsored by NSF?	(0.000.0
	institutes of contract programs operations of their	(CIRCLE ONE)
	Yes	1
	No (SKIP TO 0.19)	2



18. If you answered YES to Question 17, please complete the table below, separately for those in which you participated prior to 1970 and since 1970.

	Year partici		For programs since 1970: circle here if a			
	Prior to 1970	Since 1970	substantial part was in the field(s of your present			
Type of NSF program in which you participated	(CIRCLE	ONE)	teaching assignment			
Summer institute	1	2	1			
Academic year institute (full-time) .	2	2	2			
In-service institute (part-time during school year)	3	3	3			
Science faculty fellowship	4	4	4			
Chautauqua conference	5	5	5			
Other (SPECIFY)	6	6	6			

19.	Since 1970, activities	have you	particion	ipated in pro the National	SCIENCE	104		•	-							ONE
				Vac	(SKIP TO		_			:	:	:	:	:	. 2	

20. If you answered YES to question 19, please complete the table below.

Type of non-NSF program	Circle the type(s) of program in which you participated	Circle here if a sub stantial part of thi program was in the field of your curren teaching assignment
Institutes or extended conferences sponsored by a federal agency other then NSF	1	1.
lestitutes or extended conferences sponsored by industry or a private foundation	2	2
Institutes or extended conferences spensored by professional associations or other scholarly groups	3	3
Formal course work at a college or university independent of outside sponsorship	4	4 5
Self-study courses	3	
Practical work experience in a relevant field	6	6
Other (SPECIFY)		
	7	7

21.	For your current teaching assignmen or applied science in which you fee	t, ard	e there	e ar for	fu:	s or rthe	to r p	pi	cs fe	i SS	n s ior	ci na 1	er.	ce			
	development?													CI	RCLI	e one))
		Yes No	 (SKIP	TO	ο.	24)	:	:		:			•	•	•	<u>l</u> 2	



22. List the programs you feel you need for your professional development.

	Programs needed for professional development	exist th	program at meets need?	If a program exists are you planning to take it within the next year or two?							
		Yes (CIRCL)	No E ONE)	Yes		Uncertain E ONE)					
Α.		1	2	1	2	3					
В.		1	2	1	2	3					
с.		1	2	1	2	3					
۵.		1	2	1	2	2					
Ε.		1	2	1	2	3					

23. If in Question 22 above, you answered No or <u>Uncertain</u> to any of the programs you listed, what are your reasons for not planning to take this program in the next year or two? (INDICATE REASONS BELOW FOR EACH PROGRAM AS LETTERED FOR QUESTION 22.)

		de	fessi velop	ional ment	for APPLY
REASONS	A	В	С	D	Ē
Intend to take an alternative education program	1	1	1		1
Quality of program is unsatisfactory	2	2	2	2	2
Program being offered too far away	3	3	3	3	3
Personal cost to me would be too great	4	4	4	4	4
My schedule will be too full	5	5	5	5	5
My college schedule or my other responsibilities conflict with the hours the program is offered	6	ó	6	6	6
The college would not allow release or compensatory time to attend	7	7	7	7	7
Other (SPECIFY)	8	8	B	8	я

QUESTIONS 24 - 26 DEAL WITH STUDENT NEEDS

24. The following have frequently been identified as needs of students in two-year colleges. Ifentify those student needs that are of particular concern on this campus. IRFNK OPDER THE CIRCLED ITEMS ACCORDING TO THEIR PRIORITY, BEGINNING WITH 1 AS HIGHEST.)

DEVELOPMENT OF BASIC SKILLS (CIRCLE ALL THAT APPLY)	RANK CRDER
Langu.ge skills	
Math wills	
Study skills	
Basic manipulative skills for laboratory work 4	
Counseling on their need for basic skills 5	
OTHER NEEDS	
mivanced courses	
Honors courses	
Opportunities for practical experience	
Counseling for careers	
Courses offered more frequently than once a year 10	
Restructuring of courses and/or laboratory practices	
for use of non-traditional instructional methods 11	
Supplementary learning materials	
Increased access to college resources:	
Library/learning resources	
Taboratorios	
Laboratories	
Pagulty	



25.	What does to	his	college do	to	encourage	the	enrollment	of	the following	ı
	student gro	RCU	in science	and	i technolog	rv?				

student groups in stience and technology: _				
	W	MEN	MINORITIES	HANDICAPPED
·		(C	IRCLE ALL THAT	APPLY)
Recruitment directed toward the groups		1	1	2
Special courses		2	2	2
Faculty sensitive to the needs of the group.		3	3	3
Institutional policies and procedures	•	4	4	4
Auxiliary personnel trained to assist		5	5	5
Other (PLEASE SPECIFY)	_	6	6	6
— · · · · · · · · · · · · · · · · · · ·		•		

26.	Has	the	college	provided	for	Physical	access	of	handicapped	students	to
	scie	nce	and tecl	hnology cl	lass	es?					

							((CI	RÇ:	ĻΕ	ONE
Completely										1	
Partially	٠		-	٠						2	
Not at all					•					3	

WE ARE INTERESTED IN THE ROLE . THE FACULTY IN THE EDUCATIONAL PLENNING PROCESS AT THIS COLLEGE. QUESTIONS 27 THROUGH 30 REFER TO THE SPECIFIC ASPECTS OF THIS PROCESS.

27. In general, for individual courses on this campus, what degree of responsibility does a member of the full-time faculty have for the following planning elements?

		_			,				
		_	No	ne			C	Unable to answer	
		_	(CIRCLE	THE	ONE	NUMBER	FOR EACH	ELEMENT)
Designing course outline, goals.	•			1	2	3	4	5	6
Developing syllabus	٠		٠	1	2	3	4	5	6
Selecting text, or electing to ha				1	2	3	4	5	6
Designing or choosing laboratory exercises				1	2	3	4	5	6
Choosing own teaching methods .		٠	-	1	2	3	4	5	6
Selecting science equipment for demonstrations and lab				1	2	3	4	5	6
Developing budgets	•	•	•	1	2	3	4	5	6

28. Have you participated in the planning of an <u>individual course</u> in this college? (CIRCLE ONE)

29. In general, for a curricular program, as opposed to an individual course, what degree of responsibility does a member of the full-time faculty on this campus have for the following planning elements?

	None						Complete	Unable to answer	
		Ç	IRCLE	THE	ONE	NUMBER	FOR EACH	ELEMENT)	
Determining need for program	-		1	2	3	4	5	6	
Preparing cost estimates	-	•	1	2	3	4	5	6	
Outlining goals, defining student skills and educational outcomes .		•	1	2	3	4	5	6	
Outlining program structure	-	-	1	2	3	4	5	6	

30. Have you participated in planning a <u>curricular program</u> in this college? (CIRCLE ONE)



QUESTIONS 31 AND 32 ARE CONCERNED WITH THE USE OF PART-TIME FACULTY IN THE FIELD IN WHICH YOU ARE TEACHING.

31. What is the approximate percent of course sections taught by part-time factly on this campus in your teaching field(s)?

																((:IF	RC	LE	ONI	E)
0	-	9																	1		
10	-	19			-														2		
20	-	29																	3		
30	-	39	٠					•											4		
40	-	49	-		-		-								•				5		
		59			•	•	•	•	•	•							٠	•	€		
60		€9	•	•	•	•			•	•	•	•	•	-	-	•	-	-	7		
70	-	79	٠	-	٠	•	•	•	٠		٠	٠	٠	•	•	•	•	-	8		
80	-	89	•	•	•	•	•	•	•	•	•	•	٠	•	-	•	•	•	9		
90	_	100															•		10		

32. How do you feel about the proportion of course sections taught by part-time faculty on this campus in your teaching field(s)?

Too high		Abcut		Too low
	(CIRC	LE ON	E)	
1	2	2		c

QUESTIONS 33 AND 34 ASK FOR YOUR ASSESSMENT OF THE NEEDS IN SCIENCE EDUCATION—AT THIS COLLEGE.

33. Rate the institutional characteristics listed below in terms of their adequacy to support the science course(s) that you are teaching at this campus.

(CIRCLE THE APPROPRIATE NUMBER FOR EACH CHARACTERISTIC)

:	Institutional characteristics	Totally inade- quate		Ade- quate		Excel- lent	Does not apply
1.	Churse structure	1	2	3	4	5	6
2.	Classroom/lecture facilities	1	2	3	4	5	6
3.	Class preparation areas	1	2	3	4	3	6
4.	Lecture-demonstration facilities .	1	2	3	4	5	6
5.	Laboratory facilities (SPACE)	1	2	3	4	5	6
6.	Laboratory apparatus and equipment	1	2	3	4	5	6
7.	Budget for laboratory equipment and supplies	1	2	3	4	5	6
3.	Laboratory usage	1	2	3	4	5	6
9.	Instructional technicians (laboretory aides) quantity	1	2	3	4	5	6
10.	Instructional technicians (laboratory aides) quality	1	2	3	4	5	6
11.	Availability of teaching aids (films, other media)	1	2	3	4	5	6
12.	Size of classes	1	2	3	4	5	6
13.	Prior preparation of students	1	2	3	4	5	6
14.	Clerical support	1	2	3	4	5	. 6
15.	Library		2	3	4	5	6
16.	Availability of professional journals	1	2	3	4	5	6
17.	Opportunities of professional growth		2	3	4	5	6
18.	Teaching environment		2	3	4	5	6
19.	Articulation with transfer institutions policies on transfer of credits in my teaching field(s)	1	2	3	4	5	6



FACULTY QUESTIONNAIRE

34.	of the institutional characteristics that you indicated in Question 33 as needing improvement, select the three which you consides as having top priority and enter the corresponding characteristic number below.
	Characteristic number
	First priority.

Second priority . . . _____



ATTACHMENT 1F

EDUCATIONAL FIELDS

Please use this classification to respond to Questions 6 and 7 of this questionnaire.

Where the general fields have been divided into finer categories, please use the finer categories as much as possible. When no applicable category is given, use the general field.

CODE	FIELD	CODE	FIELD
010	Agriculture and National Resources	100	Mechanical, Engineering, and Natural Science Technologies
020	Biological Sciences	101	Aeronautical and Aviation Technologies
021	Botany	102	Agricultural Technologies
022	Ecology	103	Architectural Drafting
023	Microbiology		Technologies
024	Physiology and Human	104	Chemical Technologies
	Anatomy	105	Civil Technologies
025	Zoology	106	Electromechanical Tech- nologies
030	Computer and Information	107	Electronic Technologies
	Sciences	108	Forestry and Wildlife Technologies
040	Engineering	109	Home Economics Technolo- gies
050	General Science and Interdisci-	110	Industrial Technologies
	plinary Sciences	111	Instrumentation Technolo- gies
060	Mathematics	112	Laboratory Technologies (General)
070	Nursing	113	Marine and Oceanographic Technologies
080	Physical Sciences	114	Mechanical Technologies
001	-	115	Nuclear Technologies
081	Astronomy	116	Textile Technologies
082	Chemistry		_ +
083	Earth Sciences	120	Health Related Occupations
084	Physics	101	
000	Gardan Gadanasa	121	Clinical Laboratory Services
090	Social Sciences	122	Dental Services
091	Anthropology	123	Dietetic and Nutritional
092	Economics	3.2.4	Services
093	Geography	124	Medical Instrumentation and
094	Political Science	105	Machine Cartion
	(Government)	125	Mental Heal ()
095	Psychology	126	Nursing Related Services
096	Sociology	127	Radiological Services
		128	Other Health Related Occu- pations
		200	Education
		300	Other Non-Science or Professional



National Science Education Survey

April 1979



TO QUESTIONNAIRE

QUESTIONS 1 THROUGH OME PERSONAL INFORMATION ABOUT
YOU. THIS INFORMATION TIAL TO THIS STUDY BECAUSE STUDENTS
WITH DIFFERENT BACKGROUN OF TEN HAVE DIFFERENT EDUCATIONAL GOALS
AND NEEDS. FOR EXAMPLE, VERY LITTLE IS KNOWN ABOUT THE CHOICES
MADE BY STUDENTS OF DIFFERENT AGE AND ETHNIC BACKGROUNDS.

1.	What is your sex?		(CIRCLE ONE)
		Male	
2.	How old were you on your last birtho	lay?	(CIRCLE ONE)
		Less than 18	2 3 4 5 6
3.	To which of the following groups do	you consider you belong?	(CIRCLE ONE)
		American Indian or Alaskan Native Asian or Pacific Islander Black (except Hispanic) White (except Hispanic)	2 3 4 5
	QUESTIONS 4 THROUGH 14 SEER INFORMAT EMPLOYMENT STATE. 7.	ION ABOUT YOUR EDUCATIONAL AND	
	wave you earned either a high school coma?	diploma or a high school equivalent of the sch	(CIRCLE ONE)
		No	4
5.	if your answer to Question 4 was NO,		
		Yes	
6.	Do you already have a college degree	?	(CIRCLE ONE)
		Yes (SKIP TO Q.8) No	
7.	Before attending this college oid yo obtaining a degree or a certificate?	u attend one or more colleges with	nout (CIPCLE ONE)
		Yes	
8.	If you answered YES to Question 7, w	hat kind of college(s) did you att (CIRCLE	end? E ALL THAT APPLY
		Pwo-year college	
9.	Is your present educational program oprevious college(s)?	or curriculum the same as it was a	at your (CIRCLE ONE)
		Yes	- · · 1



	19	
		of our dite
Are you a full-time or part-time you are taking this strester or q	student, in terms of the numb uarter?	(CIRCLE ON
	Full-time Part-time	
Now many credits are you currently	y taking?	
	Credits	
		(CIRCLE ON
Are you employed?	Vag	1
	No (SKIP TO Q.1	6) 2
If you are employed, how many hou	urs a week do you work on the	average?
-	dours	
QUESTIONS 15 THROUGH 18 SEEK	INFORMATION ON YOUR EDUCATIO	NAL AND
CAREER PLANS.		
What is your career objective. (CGPANMER, ENGINEER. IF "NONE" OR		<u> </u>
Please indicate your <u>most imports</u> college when you <u>f rst enrolled</u> . Then indicate what you now consid	ant educational purpose for a (CIRCLE <u>ONE</u> NUMBER IN COLUM	ttending this
Please indicate your <u>most imports</u> college when you <u>f rst enrolled</u> . Then indicate what you now consid	ant educational purpose for a (CIRCLE <u>ONE</u> NUMBER IN COLUM	ttending this
Please indicate your <u>most imports</u> college when you <u>frst enrolled</u> . Then indicate what you now consider	ant educational purpose for a (CIRCLE <u>ONE</u> NUMBER IN COLUM	ttending this
Please indicate your most imports college when you irst enrolled. Then indicate what you now consid (CIRCLE ONE NUMBE: IN COLUMN B) Educational Purpos	ent educational purpose for a (CIRCLE <u>ONE</u> NUMBER IN COLUMNIE OF YOUR most important educa Original purpose	ttending this N A) tional purpose. Present purpose
Please indicate your most imports college when your rst enrolled. Then indicate what you now consid (CIRCLE ONE NUMBER: IN COLUMN B) Educational Purpos Obtain associate degree and then	Original purpose for a (CIRCLE ONE NUMBER IN COLUMN der your most important educa purpose (COLUMN A.)	ttending this N A) tional purpose. Present purpose
Please indicate yc ir most imports college when you i rst enrolled. Then indicate wha' you now consid (CIRCLE ONE NUMBF: IN COLUMN B) Educational Purpos Obtain associate degree and then four-year college or university.	Original purpose Original purpose (CIRCLE ONE NUMBER IN COLUM Original purpose (COLUMN A.)	Present purpose (COLUMN B)
Please indicate your most imports college when you first enrolled. Then indicate wha' you now consid (CIRCLE ONE NUMBE: IN COLUMN B) Educational Purpos Obtain associate degree and then four-year college or university. Take some college level courses to a four-year college or univers	der your most important educa Original purpose (COLUMN A.) transfer to a	Present purpose (COLUMN B)
Please indicate yc ir most imports college when you i rst enrolled. Then indicate wha' you now consid (CIRCLE ONE NUMBF: IN COLUMN B) Educational Purpos Obtain associate degree and then four-year college or university. Take some college level courses a to a four-year college or univers obtaining associate degree. Obtain associate degree and then ment, with no immediate plar	Original purpose for a (CIRCLE ONE NUMBER IN COLUMN der your most important educa Original purpose (COLUMN A) transfer to a	Present purpose (COLUMN B)
Please indicate yc ir most imports college when you i rst enrolled. Then indicate wha' you now conside (CIRCLE ONE NUMBE: IN COLUMN B) Educational Purpos Obtain associate degree and then four-year college or university. Take some college level courses at to a four-year college or university obtaining associate degree. Obtain associate degree and then sent, with no immediate plar as four-year college or university of the college of th	Original purpose for a (CIRCLE ONE NUMBER IN COLUMN A) The purpose (COLUMN A) Transfer to a 1 Ind transfer ity without 2 find employ— transfer to 3	ttending this N A) tional purpose. Present purpose (COLUMN B)
Please indicate yc ir most imports college when you i rst enrolled. Then indicate wha' you now conside (CIRCLE ONE NUMBF: IN COLUMN B) Educational Purpos Obtain associate degree and then four-year college or university. Take some college level courses at to a four-year college or university obtaining associate degree Obtain associate degree and then ment, with no immediate plar a four-year college or university obtain certificate to upgrade or	Original purpose for a (CIRCLE ONE NUMBER IN COLUMN A) The purpose (COLUMN A) Transfer to a 1 and transfer ity without 2 find employ— transfer to 3 improve skills 4	Present purpose (COLUMN B)
Please indicate yc ir most imports college when you i rst enrolled. Then indicate wha' you now conside (CIRCLE ONE NUMBE: IN COLUMN B) Educational Purpos Obtain associate degree and then four-year college or university. Take some college level courses at to a four-year college or university obtaining associate degree. Obtain associate degree and then ment, with no immediate plar a four-year college or university obtain certificate to upgrade or obtain training in a special prog	Original purpose for a (CIRCLE ONE NUMBER IN COLUMN A) The purpose (COLUMN A) Transfer to a 1 Transfer to a 1 Transfer to a 2 Transfer to a 3 Transfer to a 3 Transfer to a 3 Transfer to a 5 Transfer to a 5 Transfer to a 5 Transfer to a 5 Transfer to a 5 Transfer to a 5 Transfer to a 5 Transfer to a 5 Transfer to a 5 Transfer to a 5 Transfer to a 5	Present purpose (COLUMN B)
Please indicate your most imports college when your rst enrolled. Then indicate whar you now conside (CIRCLE ONE NUMBER: IN COLUMN B) Educational Purpose Obtain associate degree and then four-year college or university. Take some college level courses at to a four-year college or university obtaining associate degree Obtain associate degree and then ment, with no immediate plar a four-year college or university obtain certificate to upgrade or Obtain training in a special prograde one or more courses of special prograde one or more courses of special prograde one or more courses of special prograde one or more courses of special prograde one or more courses of special prograde one or more courses of special prograde one or more courses of special prograde one or more courses of special prograde or special prograde one or more courses of special prograde or special prograde one or more courses of special prograde or special	Original purpose for a (CIRCLE ONE NUMBER IN COLUMN A) Ber your most important educa Original purpose (COLUMN A) transfer to a	Present purpose (COLUMN B) 1 2 3 4 5
Please indicate your most imports college when your rst enrolled. Then indicate whar you now conside (CIRCLE ONE NUMBER: IN COLUMN B) Educational Purpose of the college of university of the college of university. Take some college level courses at the a four-year college or university obtaining associate degree Obtain associate degree and then ment, with no immediate plar a four-year college or university obtain certificate to upgrade or obtain training in a special prograke one or more courses of special ry college to see if I like it.	Original purpose for a Original purpose (COLUMN A). Transfer to a	Present purpose (COLUMN B) 1 2 3 4 5 6
Please indicate your most imports college when your rst enrolled. Then indicate whar you now conside (CIRCLE ONE NUMBER: IN COLUMN B) Educational Purpose Obtain associate degree and then four-year college or university. Take some college level courses at to a four-year college or university obtaining associate degree Obtain associate degree and then ment, with no immediate plar a four-year college or university obtain certificate to upgrade or obtain training in a special program training in a special program on the course of special program of the college to see if I like it. Other educational purpose (SPECIF	ant educational purpose for a (CIRCLE ONE NUMBER IN COLUM. der your most important educa Original purpose (COLUMN A.) transfer to a 1 ind transfer ity without 1 find employ— transfer to impreve skills 4 tram	ttending this N A) tional purpose. Present purpose (COLUMN B) 1 2 3 4 5 6 7
Please indicate your most imports college when your rst enrolled. Then indicate what you now consider the college one number: IN COLUMN B)	ant educational purpose for a (CIRCLE ONE NUMBER IN COLUM. der your most important educa Original purpose (COLUMN A.) transfer to a 1 ind transfer ity without 1 find employ— transfer to impreve skills 4 tram	ttending this N A) tional purpose. Present purpose (COLUMN B) 1 2 3 4 5 6 7



	Deg rees	Degrees earned (COLUMN A)	Highest degree to be sought (COLUMN B
	Associate degree	2 3	1 2 3 4
	None	5 6	5 6 7
	QUESTIONS 19 THROUGH 27 REQUEST INFORMATION ABOUT YOUR	COURSE OF	STUDY
19.	What is your major field of study? (INCLUDE A SPECIFIC MICROSCOPY OR ART EDUCATION. DO NOT ENTER GENERAL FIEL OR GENERAL MUCATION. IF YOU DO NOT HAVE A MAJOR THEN TO Q.20.)	DS SUCH AS	LIBERAL ART
		I	KIP TO Q.21 F YOU <u>DO</u> HAV MAJOR)
20.	I do not have a major field because (CIRCLE ALL THAT AP	PLY):	
	I have not yet decided on a major I am not following a prescribed course o Other (SPECIFY)	f study .	
1.	What is your primary reason for enrolling in this partic	cular cour:	<u></u> ?
	It is required for my major (the in Q.19)		
	It is required as part of my general program of students of a liberal arts or general education program. It is an elective for my major or general program of it is not part of my formal program. I am taking it personal interest.	ties (e.g., studies. for	2
2.	It is required as part of my general program of students of a liberal arts or general education program. It is an elective for my major or general program of it is not part of my formal program. I am taking it personal interest	f studies. f for	2 3 4
2.	It is required as part of my general program of students of a liberal arts or general education program. It is an elective for my major or general program of it is not part of my formal program. I am taking it personal interest	f studies. f for s you are following f	2 3 4
2.	It is required as part of my general program of students of a liberal arts or general education program. It is an elective for my major or general program of it is not part of my formal program. I am taking it personal interest	f studies. f for s you are collowing faire.	2 3 4
2.	It is required as part of my general program of students of a liberal arts or general education program . It is an elective for my major or general program of it is not part of my formal program. I am taking it personal interest	f studies. f for s you are ollowing faire.	currently leld(s).
2.	It is required as part of my general program of students of a liberal arts or general education program. It is an elective for my major or general program of it is not part of my formal program. I am taking it personal interest. Other (SPECIFY) Please indicate how many separate courses in the science enrolled in (this quarter or semester) for each of the fill include the course in which you received this questionnal beducational field Agriculture and natural resources. Computer and information sciences. Engineering. Health sciences (e.g., nursing, radiological technol Mathematics. Physical sciences (e.g., chemistry, physics)	f studies. f studies. f studies. for syou are collowing f	currently leld(s).
2.	It is required as part of my general program of students of a liberal arts or general education program. It is an elective for my major or general program of it is not part of my formal program. I am taking it personal interest. Other (SPECIFY) Please indicate how many separate courses in the science enrolled in (this quarter or semester) for each of the fill include the course in which you received this questionnal beducational field Agriculture and natural resources. Computer and information sciences. Engineering. Health sciences (e.g., nursing, radiological technol Mathematics.	f studies. f studies. f for s you are collowing faire.	currently leld(s).
2.	It is required as part of my general program of students of a liberal arts or general education program. It is an elective for my major or general program of it is not part of my formal program. I am taking it personal interest. Other (SPECIFY) Please indicate how many separate courses in the science enrolled in (this quarter or semester) for each of the findlude the course in which you received this questionnal field Agriculture and natural resources. Computer and information sciences. Engineering. Health sciences (e.g., nursing, radiological technol Mathematics. Physical sciences imig., chemistry, physics). Interdisciplinary and general science. Social sciences (e.g., anthropology, economics,	f studies. f studies. f studies. f for syou are collowing f	currently leld(s).
2.	It is required as part of my general program of stude for a liberal arts or general education program . It is an elective for my major or general program of It is not part of my formal program. I am taking it personal interest	f studies. f studies. f for s you are ollowing faire.	currently leld(s).



24.	How well	does	what	15	being	taught	in	this	course	meet	your	educational	needs? Circle	ONE
-----	----------	------	------	----	-------	--------	----	------	--------	------	------	-------------	------------------	-----

Completely						1
Almost completely	-	•	•	•		2
About half way						
Relatively little						
Not at all						
Uncertain						7.

25. Would you recommend this science course , the one in which you received this questionnaire) to a friend? (CIRCLE ONE)

Yes										
No.								•	•	2
Unce	r	ta:	ín		_					3

26. What new courses in science, math, engineering, or technology would you like to see this college offer that are not being offered now (IF NONE THEN ENTER "NONE" BELOW)?

IP YOU ARE NOT MAJORING IN ONE OF THE SCIENCES, SOCIAL SCIENCES, MATH, ENGINEERING OR TECHNOLOGY, STOP HERE. PLEASE MAKE SURE YOU HAVE ANSWERED ALL QUESTIONS. PLACE THIS QUESTIONNAIRE IN THE ENCLOSED ENVELOPE, SEAL THE ENVELOPE, AND RETURN IT TO YOUR INSTRUCTOR. THANK YOU FOR YOUR ASSISTANCE IN THIS STUDY.

IP YOU ARE MAJORING IN ONE OF THE SCIENCE PIELDS, PLEASE CONTINUE WITH QUESTIONS 17-30. THE P. QUESTIONS ASK YOU TO CONSIDER HOW SATISFIED YOU ARE WITH THE PROGRAM IN SCIENCE EDUCATION THAT YOU ARE TAKING AT THIS COLLEGE.

27. Below are some important characteristics of the science program of this college. Rate how satisfied you are with each characteristic, using a code of 1 for totally <u>dissatisfied</u> and 5 for totally <u>satisfied</u>.

If you have no experience with a characteristic on which to base a rating, circle the number 6 for no rating possible. (CIRCLE THE APPROPRIATE NUMBER ON EACH LINE):

Ch racteristics	Totally dis- satisfied	!			Totally satis- fied	
Curriculum structure (set of courses require: for your program of study)			3		٠	6
Curriculum advising	1	2	3	4	5	6
College facilities for science:						
Classrocms	1 1 1	2 2 2 2	3 3 3	4 4 4	5 5 5 5	6 6 6
Scheduling of science courses (time of day, day of week)	1	2	3	4	5	6
Size of classes in science	1	2	3	4	5	6
Library	1	2	3	4	5	6
Audio-visual materials	1	2	3	4	5	6
Other (_PECIFY)	1	2	3	4	5	6



As a person majoring in one of the science fi science program in which you are enrolled mee	
science program in which you are entoried mee	cts your educational needs: (CIRCL
	Completely
What improvements do you fee! should be made you are receiving at this college to more com	in the science education program
you are receiving at this correge to more com	precery meet your meeds:
Would you recommend the educational program o enrolled to a friend?	r major field in which you are (CIRCLE
	Yes
PLEASE MAKE SURE YOU HAVE ANSWERED ALL QUEST.	TONS BEACE PUTS OFFICE TONNIATED

APPENDIX F . Weighting Procedures



APPENDIX F

WEIGHTING PROCEDURES

In order to develop a weighting system for the survey, it is necessary to have a clear understanding of the units of analysis of the study, and also of the populations they are intended to represent. Some rather unusual complexities are involved in defining the populations.

There are three separate units of analysis: the colleges, teachers, and students. The probabilities of selection are different for all three, although there are some interactions.

Colleges

The population of colleges is simply all colleges in the sampling frame. The weight for a school is thus the reciprocal of its probability of selection, together with an adjustment for nonresponse. The simplest, and probably best, adjustment for nonresponse is to treat the respondents as if they were the full sample. The weight in a cell is then N/n, where n is respondents. (Equal probability selection was used within cells.) To keep weights from being erratic, cells with no cases, and sometimes with only one or two cases, were collapsed. The collapsing patterns should attempt to group cells where approximately the same initial sampling rates were used.

The resulting weights are shown in the last column of Table F-L (see page F-8). The other columns show the original weight, the population and respondent sizes, and the way strata were grouped for collapsing.



There are two sets of weights for colleges. Since 164 colleges completed the institutional questionnaire, while 168 colleges returned usable results for faculty and student questionnaires, the sample weights must reflect these different numbers in order for them to extend to the population of 1,232 colleges. The two sets of weights are shown in Table F-1 under columns for 168 and 164 institutions, applying respectively to all analyses for student as 1 faculty questionnaires and for institutional questionnaire results.

The cells used for weighting should reflect the classifications established for sampling purposes. Even if information obtained for a sample school indicated that to was classified in a wrong cell (e.g., the true number of students may be different from the number anticipated), the weight should still be based on the original classification, although analytic tabulations can reflect the true situation.

Teachers

There are apparently two kinds of populations that an be considered for the analysis of the data. One is all teachers of science. The second is the set of teachers in specific fields. The total of teachers in the five fields is not exactly equal to the total number of teachers because some teachers instruct classes in different fields. For statistical purposes, teachers with classes in more than one field hould be considered as teaching in each of the fields separately. For analyses of science teachers as a whole, the duplication should be eliminated.

However, experience has proved that the amount of duplication is trivial, and we have decided to ignore it.



For analysis of separate fields, each field is considered a separate population. The probability of selection of a particular teacher depends on the number of sections in that field he or she teades and on the probability of one of the sections being selected within his or her school.

The probability of a section in a particular school being selected can be derived as follows. Initial sampling rates were developed to provide a self-weighting sample of classes in each field. These rates were based on an assumed population of 1,353 institutions and a sample of 186 respondents. Those rates are:

Field	Rate
l - Life sciences	1/241
2 - Physical sciences	1/136
3 - Technology	1/122
4 - Mathematics	1/113
5 - Social science	1/273

Subsequently, three changes occurred in the composition of the population and sample that affected the effective sampling rates: 1) the number of institutions in the population was reduced from 1,353 to 1,232; 2) the number of responding institutions was reduced to 168; and 3) some of the teachers selected for the sample did not cooperate. The joint effect of the first two of these changes is reflected in the changes in weights shown in Table F-1. The effect of the third is to effectively reduce the sampling rate in a field by a factor of 1-R, where R is the teacher response rate for the field.

The following notation is used:

- h = the field of science;
- i = the stratum;



ij = the jth teacher in a school in the ith
stratum;

NW; = new weight in the ith stratum;

OW; = old weight in the ith stratum;

 s_h = initial overall sampling rate in h^{th} field;

R_h = teacher response rate in the hth field;

mhij = number of classes taught by the jth teacher
in the ith stratum, in field h.

Then the effective sampling rate for a class in the hth field, in the ith stratum is

$$r_{hi} = s_h \times \frac{OW_i}{NW_i} \times R_h$$
 (1)

It should be noted that R_h is to be measured by having the selected teachers within the 168 sample schools in the denominator, not the original 186 schools. (The reduction from 186 to 168 is reflected in the change of old to new weights.) The numerator of R_h is the number of responding teachers.

The probability of a particular teacher being selected is $m_{\mbox{hij}}$ times the probability of a class. It is therefore

$$P_{hij} = m_{hij} \times S_h \times \frac{OW_i}{NW_i} \times R_h$$
 (2)

Each teacher has the possibility of a different probability of selection. The teacher's weight is the reciprocal of the probability of selection.

In calculating the probabilities, the values of S_h are shown above (e.g., 1/241, 1/136, etc.), and the old and new weights are shown in Table F-1. The values of R_h were calculated.



All of these values were fed into the computer. The value of mass obtained from the questionnaire for each teacher; it is the number of courses taught in the field.

Students

As in the case of teachers, two populations of students exist. One is the set of students takin courses in a particular field. The second consists of students taking any courses in science. However, unlike the situation for teachers, it is be lieved that considerable duplication exists among fields. Consequently, it is necessary to have two separate weighting methods. First we will consider weights for individual fields.

Student in a Particular Field -- The situation is quite similar to that of teachers, but with one additional component. If $n_{\mbox{hij}}$ is the number of classes in the field a student is enrolled in, then the probability of one of his classes being selected is

$$r_{hij} = n_{hij} \times S_h \times \frac{OW_i}{NW_i} \times R_h$$
 (3)

where $R_{\rm h}$ is the proportion of the sample classes in the 168 schools in which students were actually sampled. To get the effective probability of selection, the sampling rate for students within the sample classes and the student response rate need to be incorporated, as follows:

thij = sampling rate in the class selected for
 the hijth student;

P' = student response rate in the hth field.



The probability of selection of a student is shown in (4). The weight is the reciprocal of this expression.

$$P_{hij} = t_{hij} \times n_{hij} S_h \times \frac{OW_i}{NW_i} \times R_h \times R_h'$$
 (4)

The values of t_{hij} and n_{hij} appear on the student and faculty questionnaires. The values of S_h and OW_i and NW_i are found on p. F-3 and in Table F-1, respectively. $R_h \times R_h'$ is the overall student response rate. It can be obtained as a single response rate, or the two terms R_h and R_h' may be obtained separately.

All Students Studying Science -- The probability of a student having any of his or her science classes selected is:

$$\frac{\Sigma}{h} \left(h_{hij} \times S_h \times \frac{CW_i}{NW_i} \times R_h \right)$$
(5)

Given that a particular class is selected, the chance that the student will be selected is $t_{\mbox{hij}}$. Also, the adjustment for student response rate must be taken into account. The overall probability is then

$$P_{hij} = t_{hij} \stackrel{\Sigma}{h} \left(n_{hij} \times S_h \times \frac{OW_i}{NW_i} \times R_h \times R_h' \right)$$
 (6)

The weight is the reciprocal of this probability.

In formula (4), the only $N_{\mbox{hij}}$ that is used is the number of courses the student takes in the field in which he or she is sampled. In formula (6), the number of classes in each of the five fields is used



Summary

To summarize the methods of obtaining weights, we

have:

- Data for colleges weights are the figures in the last two columns of Table F-1;
- 2. Data for teachers reciprocal of the formula in (2);
- 3. Data for students where analysis is for students taking courses in a specific field reciprocal of the formula in (4);
- 4. Data for students where analysis is for all science students reciprocal of the formula in (6).



Table F-1. Original and final weights for colleges

Stratum	Original weight	Popu- lation size	Number of respon- dents	Collapsed stratum number	New weight (168)	New weight (164)
1		17	0	1		
2	10.57	74	5	. 1	19.40	19.40
3	8.25	30	4	2	8.25	8.25
4	3.43	21 .	7	3	3.00	3.00
5	2.00	3	2	4	1.50	1.50
6	2.00	1	1	5	1.00	1.00
7	2.00	2	1	6	2.00	2.00
8	95.50	55	1	7	17.06	17.06
9	12.94	235	16	7	17.06	17.06
10	8.05	164	19	8	8.63	8.63
11	4.97	179	30	9	5.97	5.97
12	4.45	. 106	19	10	5.58	5.58
13	3.45	116	31	11	3.74	4.14
14	3.00	44	15	12	2.93	2.93
15		4	0	1.		
16		2	0	1		
17		3	0	2		
18		0	0	-		
19		0	0	_		
20	-	0	0	-		
21		0	0	_		
22	17.83	99	6	13	16.50	16.50
23	8.57	61	••.	14	8.71	10.17
24	4.50	9	2	15	4.00	4.00
25	4.00	5	2	15	4.00	4.00
26		1	0	15		
27		1	0	15		
28		0	0	-		